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**THE HERPETOLOGY OF SOUTHERN RHODESIA
PART 1. SNAKES**

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WITH SIX PLATES

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INTRODUCTION

This is the first comprehensive Check List of the Snakes of Southern Rhodesia to be published. The paper has been expanded to include much original ecological material and with the addition of a systematic key it should serve as a sound basis for the serpentology of the colony.

This work has been undertaken at the suggestion of Dr. E. E. Williams of the Museum of Comparative Zoology, after I had submitted a brief outline of the herpetology of Southern Rhodesia to Mr. Arthur Loveridge at that Museum.

The material examined consists of all the specimens in the National Museums of Southern Rhodesia at Bulawayo and Salisbury, plus a collection made by the Umtali Branch of the Herpetological Association of Rhodesia. I have also obtained the data for all Southern Rhodesian specimens in the Transvaal Museum and the British Museum (Natural History). Finally, I have examined a large number of snakes which were too badly decomposed or damaged to preserve. Altogether I have collated the data for 1385 specimens representing 61 species or races. Chubb's 1909 list contained 30 species from Matabeleland, and subsequent additions brought the total up to 52. The following

forms are recorded from Southern Rhodesia for the first time:

- Leptotyphlops longicauda* (Peters)
- Lycodonomorphus rufulus mlanjensis* Loveridge
- Meizodon semiornata semiornata* (Peters)
- Philothamnus ornatus* Bocage
- Prosymna sundevallii sundevallii* (A. Smith)
- Dromophis lineatus* (Duméril and Bibron)
- Psammophis angolensis* (Bocage)
- Aparallactus lunulatus lunulatus* (Peters)
- Naja melanoleuca* Hallowell

There are very few taxonomic alterations. *Naja nigricollis mossambica* Peters is revived for certain light-coloured cobras with 21-25 midbody scale rows, which are found in Southern Rhodesia and Mozambique, extending north into Northern Rhodesia, Nyasaland and Tanganyika, and south into the Union of South Africa. Matabeleland specimens of *Aparallactus capensis* are regarded as intermediates between the typical form and the western race *bocagei*. Most specimens of *Atractaspis bibronii* from Southern Rhodesia prove to be intermediates between the typical form and the northern race *rostrata*.

Systematic Discussion. In this section is presented all the information at present available on the snakes of Southern Rhodesia. The subjects covered are best discussed under the headings employed.

Citations of literature. The original description of each form is given in full and these references are consequently omitted from the Bibliography on pp. 81-84. This is followed chronologically by every reference to Southern Rhodesian material in the herpetological literature that I have been able to trace.

Native Names. The present generation of Africans use very few names for snake species and the few that I have recorded were gleaned from the older men. There is much confusion among the younger generation. In Matabeleland, *Pimpi* is the name correctly applied to the Spitting Cobra (*Naja n. mossambica*), but it is now often applied to any grey or brown snake, even a female Boomslang (*Dispholidus typus*). A full list of English names is included in the systematic key on pp. 88-95.

Size. Where a specimen is referred to by a registered museum number, the following prefixes are used:

NM — National Museum of Southern Rhodesia, Bulawayo.

SM — Queen Victoria Museum, Salisbury.

UM — Umtali Museum, Umtali.

TM — Transvaal Museum, Pretoria.

MCZ — Museum of Comparative Zoology, Harvard.

BM — British Museum (Natural History).

Variation, Colouration, Size, Sexual dimorphism, Breeding, Diet, Parasites, Enemies, Defence, Venom, Habits and Habitat. These data are based on Southern Rhodesian material only.

Localities. Under this heading are listed: all Southern Rhodesian localities found in the literature; the localities of all specimens in the six museums listed above and the additional material examined by myself or members of the Herpetological Association of Rhodesia; a few localities are based on personal positive sight records.

Key to the Snakes of Southern Rhodesia. This is based purely on local material and the couplets do not necessarily hold good for other regions.

Plates and Text Figures. Live subjects were used for all the photographs. The text figures illustrating the key (Figs. 7-10) were personally drawn from local specimens.

ACKNOWLEDGEMENTS

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Thanks are also due to Dr. G. Theiler of the South African Veterinary Department for identifying the ticks, and Dr. F. Zumpt of the South African Institute for Medical Research for identifying the mites.

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SYSTEMATIC DISCUSSION
TYPHLOPIDAE

TYPHLOPS DELALANDII Schlegel

Typhlops lalandii Schlegel, 1844, *Abbild. Serp.*, p. 38, pl. xxxii, figs. 17-20.
Typhlops delalandii Chubb, 1909a, p. 595; 1909b, p. 35; Boulenger, 1910, p. 498; FitzSimons, F. W., 1912, pp. 52, 54.

Variation. (8 specimens.) Midbody scale rows 28. Diameter included in total length 41-50 times.

Colouration. Pink in life, each dorsal scale with a grey centre.

Size. Largest (NM/M.781) 295 (291+4) mm. from Bulawayo.

Habitat. One was found in a nest of small black ants under a stone at Richardson's Kop, Essexvale. An Irisvale specimen was taken in a pile of loose gravel on a quartz reef.

Distribution. South Matabeleland, extending as far north as Sawmills.

Localities. Sawmills; Bulawayo; Essexvale; Irisvale; Bembesi; Heany.

TYPHLOPS SCHLEGELII MUCRUSO (Peters)

Onychocephalus mucruso Peters, 1854, *Monatsb. Akad. Wiss. Berlin*, p. 621.

FitzSimons, F. W., 1912, pp. 52, 54; Hewitt and Power, 1913, p. 160;

Typhlops mucruso Boulenger, 1902, p. 17; 1910, p. 498; Chubb, 1909a, p. 595;

FitzSimons, F. W., 1912, pp. 52, 54; Hewitt and Power, 1913, p. 160;

Tasman, 1953, p. 19; Rose, 1955, p. 75.

Typhlops schlegelii (not Bianconi), Boulenger, 1902, p. 17; 1910, p. 499 (part); FitzSimons, F. W., 1912, pp. 52, 54 (part).

Typhlops macruso (misprint), Chubb, 1909b, p. 35.

Typhlops dinga Boulenger, 1910, p. 499; FitzSimons, F. W., 1912, pp. 52, 54; Rose, 1955, p. 75.

Typhlops schlegelii mucruso FitzSimons, V. F., 1939, p. 20.

Typhlops schlegelii schlegelii Bogert, 1940, p. 15.

Native name of Zambezi Blind-Snake. *Inyorka umshlaba* (Sindebele); *N'dinga* (Cheshona).

Variation. (56 specimens.) Midbody scale rows 32-36. Diameter included in total length 21-53 times. These specimens cannot be separated from Northern Rhodesian material, so the typical form probably does not occur north of the Limpopo.

Colouration. Two colour varieties occur; 33 snakes represent the lineolate phase, which is blue-grey with dark-edged dorsal

scales, becoming uniform brown with age; 23 snakes represent the blotched phase (var. *varius*), blue-grey to whitish, with irregular black blotches.

Size. Largest (UM/R.1) 817 (809+8) mm. from Umtali. Smallest (NM/M.780) 190 (187+3) mm. from Bulawayo. Seventeen specimens exceed 600 mm. in length.

Breeding. On 31.v.57 a 645 mm. ♀ from Bulawayo contained 37 eggs measuring 17 x 10 mm.

Dict. Termites and their larvae.

Enemies. A large specimen about two feet in length had been swallowed by a 40" *Calamelaps u. miolepis* at Odzi.

Defence. When picked up, the blind-snake pushes its terminal spine into the hand of the captor, giving rise to the legend of a snake with a "sting" in its tail. Also it discharges the contents of the cloaca.

Habits. Often found wandering about on the surface during the rains. Small specimens are often found under stones, the adults apparently living at greater depths.

Distribution. Common throughout Southern Rhodesia.

Localities: Mazoe; Salisbury; Chishawasha; Marandellas; Monte Cassino; Inyazura; Odzi; Umtali; Odzani Falls; West Sebungwe; Gatooma; Selukwe; Turk Mine; Glenorehy, Insiza; Bulawayo; Matopos; Cyrene; Syringa; Empandene; Legion Mine; Bushtick Mine; Essexvale; Balla Balla; Irisvale; Sinkukwe; Stanmore; Chikore; Mount Silinda.

LEPTOTYPHILOPIDAE

LEPTOTYPHILOPS CONJUNCTA (Jan)

Stenostoma conjunctum Jan, 1861, Arch. Zool. Anat. Fisiol., vol. 1, p. 189.

Glauconia conjuncta Boulenger, 1910, p. 500; FitzSimons, F. W., 1912, pp. 56, 57.

Leptotyphlops conjuncta FitzSimons, V. F., 1939, p. 20; Rose, 1955, p. 75.

?*Leptotyphlops emini* (not Boulenger) Bogert, 1940, p. 14.

Variation. (6 specimens.) Midbody scale rows 14.

Colouration. Black, blue-grey when about to slough.

Size. Largest (UM/R. 30) 156 (140+16) mm. from Umtali.

Habitat. Taken under stones on a hillside at Umtali and under a stone within a few yards of the Tanganda River.

Distribution. Eastern districts of Southern Rhodesia.

Localities: Umtali; Changadzi River; Tanganda River; Mount Silinda; Charter Estates.

LEPTOTYPHLOPS SCUTIFRONS (Peters)

Stenostoma scutifrons Peters 1854, Monatsb. Akad. Wiss. Berlin, p. 621.

Glauconia nigricans (not Schlegel) Boulenger, 1902, p. 17.

Glauconia scutifrons Chubb, 1909a, p. 595; 1909b, p. 35; Boulenger, 1910, p. 500; FitzSimons, F. W., 1912, pp. 56, 57.

Variation. (29 specimens.) Midbody scale rows 14.

Colouration. Silver-grey to black.

Size. Largest (NM/M .921) 223 (209+14) mm. from Balla Balla.

Diet. Small termites and their larvae.

Habitat. Usually taken under stones or uncovered during gravel-pit clearing operations. Sometimes found wandering about on the surface during the rains.

Distribution. Common throughout Mashonaland and Matabeleland.

Localities: Mount Hampden; Salisbury; Chishawasha; Ga-tooma; Bulawayo; Essexvale; Balla Balla; Irisvale; Glass Block; Stanmore.

LEPTOTYPHLOPS LONGICAUDA (Peters)

Stenostoma longicaudum Peters, 1854, Monatsb. Akad. Wiss. Berlin, p. 621.

Variation. (11 specimens.) Midbody scale rows 14. Diameter into length 51-71 times. Tail length .13 to .18 of the total.

Colouration. Flesh pink to pale brown above (in life), flesh pink below.

Size. Largest (NM/M.1400) 205 (178+27) mm. from Irisvale.

Breeding. The largest specimen contained two eggs on 22.xi.57; these measured 21 x 4 mm.

Habitat. Ten specimens were taken, together with four *Leptotyphlops scutifrons*, on a quartz reef, well wooded but with little undergrowth. Another snake was taken on a granite outcrop three miles away.

Distribution. These are the first specimens to be taken south of the Zambezi since Peters described the species from Tete.

Localities: Irisvale.

BOIDAE

PYTHON SEBAE (Gmelin)

Coluber Sebae Gmelin, 1788, Syst. Nat. (ed. 13), p. 1118.

Python sebae Chubb, 1909a, p. 595; 1909b, p. 35; Boulenger, 1910, p. 442;

FitzSimons, F. W., 1912, p. 58; Tasman, 1953, p. 18; Isemonger, 1955, p. 66.

Native Name of Python. *Shatu* (Cheshona and Sindebele).

Variation. (16 specimens.) Midbody scale rows 81-89; ventrals 270-284; subcaudals 63-81. Tail length .10 to .13 of the total.

Size. Largest 3810 (3430+380) mm. from Umtali.

Breeding. On 24.xii.56 a 13-foot ♀ was discovered coiled round her eggs in a hole in a bank beside a small dam near Umtali. Three newly hatched young were basking outside the hole. A coil of the mother was visible from outside. As I pulled out the big python the leathery shelled eggs split open and I had to remove handfuls of young snakes at intervals in order to avoid crushing them. Only three unruptured eggs remained and these hatched the same evening, bringing the total number of hatchlings to 39. This clutch appeared to be 100 per cent fertile. The hatchlings measured between 600 mm. and 633 mm. in total length.

Diet. A python killed at Salisbury contained a Springhare (*Pedestes cafer*). Captive specimens consumed various dead mammals and birds: rats (*Rattus*, *Tatera*, *Mus* spp.); hares (*Lepus saxatilis micklei*); hyraxes (*Heterohyrax syriacus rhodesiae*); muishond (*Ictonyx s. striatus*); genet (*Genetta felina pulchra*); nightjars (*Caprimulgus* spp.); colies (*Urocolius indicus pallidus*). The hatchlings fed freely on rats and small birds and one took a shrew (*Crocidura* sp.).

Parasites. Ticks found in the nostrils of the Umtali ♀ were identified by Dr. Theiler as *Amblyomma nuttalli* and *Aponomma exornatum*.

Habits. Sluggish during the day, when much of the time is spent in basking. Becomes more active after dark, when most of the hunting is probably done. The python shows the usual serpentine lack of intelligence when feeding. The prey, when manipulated to suggest that it is alive, is seized and held by the numerous sharp recurved teeth, while several coils are rolled

around it. The snake constricts until it feels that life is extinct, then begins to search for the head with flickering tongue. This search may last for up to half an hour if the head happens to be concealed by the coils. When the head is finally discovered, the python gapes and commences to swallow the prey head first. The animal is usually held by a coil to enable the snake to pull against it. An adult python has considerable difficulty in swallowing a small rat or bird, as the prey is not large enough to hold with a coil. The snake usually gets the animal across the jaws and has to juggle with it to arrange it lengthways.

Habitat. An 8½-foot ♀ was found basking at the top of a bank above a small stream at Chishawasha; only 100 yards away was a native kraal. The python slid down the bank and into the stream, where I discovered her coiled up close to the bank with only her nostrils showing above the water. Pythons are rarely found at any great distance from water.

Distribution. Widely distributed throughout Southern Rhodesia.

Localities: Mazoe; Salisbury; Domboshawa; Chishawasha; Nyamaropa; Odzi; Old Umtali; Umtali; Mtao Forest; Selukwe; Umshagashe River; Fort Victoria; Shabani; Bulawayo; Fort Usher; Syringa; Springvale; Essexvale; Beitbridge; Matopos.

COLUBRIDAE

COLUBRINAE

LYCODONOMORPHUS RUFULUS RUFULUS (Lichtenstein)

Coronella rufula Lichtenstein, 1823, Verz. Doubl. Mus. Berlin, p. 105.

Ablabophis rufulus Boulenger, 1896, p. 318; FitzSimons, V. F., 1939, p. 21;

Tasman, 1953, p. 35; Isemonger, 1955, p. 67.

Lycodonomorphus rufulus Rose, 1955, p. 90.

Lycodonomorphus rufulus rufulus FitzSimons, V. F., 1958, p. 209.

Variation. (22 specimens.) Midbody scale rows 19; ventrals 166-175; anal entire (divided in one Glen Lorne snake); subcaudals 55-74; upper labials 8, the fourth and fifth entering the orbit¹; lower labials 8, the first four in contact with the anterior sublinguals; preocular 1; postoculars 2; temporals 1+2. Tail length .18 to .27 of the total.

Colouration. Dark brown to olive above. Below, pinkish or

¹ Rarely 9, the first five in contact with the anterior sublinguals (one Vumba Snake).

yellowish, subcaudals with a dark median line, dark edged, or uniform greyish.

Size. Largest ♂ (T.M.22408) 575 (432+143) mm. from Pungwe Causeway. Largest ♀ (NM/M.625) 691 (567+124) mm. from Glen Lorne, Salisbury.

Dict. A juvenile taken at Leopard Rock, Vumba Mountain, disgorged a large sedge frog (*Hyperolius* sp.). Captive snakes from the same locality took frogs (*Rana* spp.), constricting only the larger ones.

Habitat. Six large adults were killed in the foundations of a bridge demolished at Glen Lorne, Salisbury. Two juveniles taken at Leopard Rock were under stones on the edge of two shallow dams, which were the breeding grounds of enormous numbers of *Kassina senegalensis*. One of these snakes shared its retreat with a Vumba Skink (*Scelotes arnoldi*).

Distribution. Mashonaland and the Eastern Districts of Southern Rhodesia. None of these Water-Snakes seems to have been recorded from Matabeleland since the single specimen, without a precise locality, listed by Boulenger in 1896.

Localities: Glen Lorne, Salisbury; Pungwe Causeway; Vumba Mountain; "Matabeleland."

LYCODONOMORPHUS RUFULUS MLANJENSIS Loveridge

Lycodonomorphus rufulus mlanjensis Loveridge, 1953, Bull. Mus. Comp. Zool., vol. 110, p. 253.

Variation. (3 specimens.) Midbody scale rows 21; ventrals 164-166; anal entire; subcaudals 56-73; upper labials 8, the fourth and fifth entering the orbit; lower labials 8, the first four in contact with the anterior sublinguals; preocular 1; postoculars 2; temporals 1+2. Tail length of ♂ .25 of total, of ♀ .18 of total.

Colouration. Glossy olive-black above. Upper and lower labials white, lowest lateral scale row and edges of preceding one white. Immaculate white below, tail with a dark median line.

Size. ♂ (NM/M. 619) 460 (340+120) mm. from Nyamaropa. ♀ (UM/R. 37) 700 (575+125) mm. from Nyamaropa.

Breeding. A ♀ from the Macheke River, near Monte Cassino, contained 10 eggs (Tasman, *in litt.*).

Habitat. The ♂ was taken by W. W. Armitage in a boulder-strewn stream at Nyamaropa, north of Inyangana.

Distribution. Northeastern corner of Southern Rhodesia.
Localities: Nyamaropa; Monte Cassino.

BOAEDON FULIGINOSUS FULIGINOSUS (Boie)

Lycodon fuliginosus Boie, 1827, Isis von Oken, vol. 20, col. 551.

Boodon lineatus Boulenger, 1902, p. 17; 1910, p. 446; Chubb, 1909a, p. 595; 1909b, p. 35; FitzSimons, F. W., 1912, p. 84; Hewitt and Power, 1913, p. 161.

Boaedon lineatus FitzSimons, V. F., 1939, p. 21; Tasman, 1953, p. 35; Rose, 1955, p. 89.

Boaedon lineatum Isemonger, 1955, p. 68.

Boaedon fuliginosus fuliginosus Loveridge, 1957, p. 251.

Variation. (70 specimens.) Midbody scale rows 26-33 (i.e., 26 in 1; 27 in 18; 28 in 1; 29 in 31; 31 in 3; 33 in 2); ventrals 198-228; anal entire; subcaudals 45-68; upper labials 8, the fourth and fifth entering the orbit; lower labials 8-10, the first three or four in contact with the anterior sublinguals; loreal 1; preoculars 1 or 2; postoculars 2; temporals 1+2 (usual), 1+3 (2+3 in one Bulawayo snake). Tail length .11 to .17 of the total.

Colouration. Dark red-brown to yellow-brown above, a light grey "V" extending from the snout through the upper eye to the back of the head. This marking is distinct in juveniles, less so in adults. Juveniles often have dark maroon spots and mottled stripes on the body, but these markings usually fade out in the adult. Below, "mother of pearl" white.

Size. Largest ♂ 725 (600+125) mm. from Umtali. Largest ♀ 1170 (1040+130) mm. from Umtali.

Sexual dimorphism. In 22 males the range of ventrals is 198-216; the range of subcaudals is 56-68; and the tail is .14 to .17 of the total length. In 34 females the range of ventrals is 210-226; the range of subcaudals is 45-57; and the tail is .11 to .13 of the total length.

Breeding. Captive snakes found in coitu on 16th and 17th of September. A captive 705 mm. ♀ laid 7 eggs on 10th November.

Dict. Juveniles subsist mainly on lizards; adults take rats. This powerful constrictor can kill a full-grown rat in a matter of seconds. Captive snakes have taken skinks (*Mabuya s. striata*; *Mabuya v. varia*; *Mabuya q. margaritifera*) and rats. Captive

specimens at Umtali took frogs (*Rana* spp.) and one ate a shrew. One small snake, 487 mm. in length, swallowed four *Mabuya v. varia* in three days.

Enemies. A small House-Snake was found near Mount Hampden with its head and neck devoured, the trade mark of a mongoose.

Habits. Never found abroad during the day, the House Snake emerges at dusk to hunt. Although it may bite fiercely and draw blood when captured, this snake soon becomes docile with a little handling.

Habitat. Ubiquitous, but most plentiful around human settlements, where skinks and rats abound. Young snakes are often found under stones and rubbish heaps. I found one specimen under a stone in a waterlogged pasture on Vumba Mountain, a more suitable spot for *Lycodonomorphus* or *Natriciteres*!

Distribution. Common throughout Southern Rhodesia.

Localities: West Sebungwe; Trelawney; Mazoe; Mount Hampden; Salisbury; Marandellas; Odzi; Umtali; Vumba Mountain; Nyamashatu River; Mount Silinda; Que Que; Gwamayaya River; Shangani River; Sawmills; Bulawayo; Khami; West-acre; Empandene; Essexvale; Irisvale; Selukwe; Bembesi; Heany; Mount Darwin.

LYCOPHIDIUM CAPENSE CAPENSE (A. Smith)

Lycodon capensis A. Smith, 1831, S. African Quart. Journ., vol. 1, p. 18.

Lycophidium capense Chubb, 1909a, p. 595; 1909b, p. 35; Boulenger, 1910, p. 447; FitzSimons, F. W., 1912, p. 85; Hewitt and Power, 1913, p. 162.

Lycophidion capense capense FitzSimons, V. F., 1939, p. 21.

Lycophidion capense Tasman, 1953, p. 35; Rose, 1955, p. 92.

Lycophidion capensis Isemonger, 1955, p. 68.

Variation. (51 specimens.) Midbody scale rows 17; ventrals 165-192; anal entire; subcaudals 25-39; upper labials 8, the third, fourth and fifth entering the orbit; lower labials 8, the first five in contact with the anterior sublinguals; preocular 1; postoculars 2; temporals 1+2. Tail length .08 to .14 of the total.

Colouration. Jet black to brownish black above, each scale tipped with white. Below, uniform white or uniform steel-grey to brownish, more often white with dark blotches. Head black, uniform or with an intricate pattern of fine white lines. A speci-

men from Westacre differed from all others examined in having a double row of large black dorsal blotches against the normal black and white speckled background.

Size. Largest 504+ (470+34+) mm. from Salisbury. Smallest (NM/M. 297) 155 (140+15) mm. from Bulawayo.

Breeding. The very large female recorded above laid 5 eggs in early November. On 16th December at Bulawayo a 405 mm. ♀ contained 7 eggs measuring 21 X 10 mm. On 29th December at Bulawayo a 340 mm. ♀ contained 6 eggs measuring 18 X 7 mm. Another 367 mm. Bulawayo ♀ contained 4 eggs measuring 22 X 10 mm.

Diet. The Cape Wolf-Snake seems to subsist almost entirely on skinks. *Mabuya s. striata* and *Mabuya v. varia* are taken readily by captive snakes; stomachs examined invariably contained the same species or *Ablepharus wahlbergii*.

Habits. A nocturnal species, often found under stones and rubbish during the day. Only once have I found one in the open during the hours of daylight; this snake was basking in the afternoon sun on a newly cut firebreak near Mount Hampden.

Distribution. Common in Mashonaland and Matabeleland, this species seems to be rather scarce in the Eastern Districts.

Localities: Trelawney; Mount Hampden; Salisbury; Hunyani; Chishawasha; Marandellas; Odzi; Umtali; Mount Silinda; Selukwe; Matetsi; Fatima; Lupaue; Sawmills; Nyamandhlovu; Turk Mine; Bulawayo; Matopos; Westacre; Irisvale; Lumane; Bembesi.

MEHELYA CAPENSIS CAPENSIS (A. Smith)

Heterolepis capensis A. Smith, 1847, Ill. Zool. S. Africa, pl. lv.

Simocephalus capensis Chubb, 1909a, p. 595; 1909b, p. 35; Boulenger, 1910, p. 506; FitzSimons, F. W., 1912, p. 85.

Mehelya capensis capensis Loveridge, 1939, p. 142 (Generic revision).

Mehelya capensis Tasman, 1953, p. 35; Rose, 1955, pp. 91, 92; Isemonger, 1955, p. 69.

Native name of Cape File-Snake. *N'kwakwa* (Sindebele); *N'dara* (Cheshona).

Variation. (17 specimens.) Midbody scale rows 15; ventrals 195-220; anal entire; subcaudals 44-58; upper labials 7, the third and fourth entering the orbit (one Essexvale snake has 8 labials

on one side and 7 on the other, where only the third enters the orbit); lower labials 8, the first four in contact with the anterior sublinguals; loreal 1; preocular 1; postoculars 2; temporals 1+2 (2+3 on one side of an Essexvale snake). Tail length .11 to .14 of the total.

Colouration. Purplish brown to black above, the vertebral rows of prominent bicarinate scales ivory white, outer scale rows white at the base, exposed skin between the widely spaced scales mauve. Below, ivory white with dark markings at the ends of the ventrals.

Size. Largest ♂ 1220+ (1085+135+) mm. from Irisvale. Largest ♀ (NM/M. 1769) 1625+ (1500+125+) mm. from 14 miles north of Bulawayo.

Breeding. On 15.X.57 a 4-foot Irisvale ♀ contained 5 eggs, measuring 55 X 20 mm. She was killed in a cattle pen, where she may have retired to lay.

Diet. A 53-inch ♀, killed after dark in a native hut at Essexvale, was engaged in swallowing an adult skink (*Mabuya s. striata*). Another Essexvale snake disgorged a toad (*Bufo carens*) after capture. A captive Essexvale ♂ took a 9-inch White-lipped Snake (*Crotaphopeltis h. hotamboeia*), seizing it in the middle of the body and swallowing it without any attempt at rearrangement. He also took toads (*Bufo regularis* and *Bufo carens*). He showed no interest in juvenile *Psammophis s. subtaeniatus* or *Causus defilippii*, but was terrified of a young *Naja n. mossambica*. A Bulawayo snake contained an adult *Agama cyanogaster*.

Parasites. The extensive areas of exposed skin between the widely spaced scales of this species make it particularly vulnerable to the attentions of ticks (*Aponomma latum*). My captive Essexvale ♂ succumbed to nematodes.

Defence. A four-foot Essexvale ♀ constricted my wrist when captured and emitted a cloacal discharge, unpleasant, but not in the same class as that of the common English *Natrix*. Neither of my captive specimens ever attempted to bite.

Habits. Strictly nocturnal and most in evidence during the rains. Most of the specimens examined were either killed in native huts or were road casualties. One was captured while hunting toads on a veranda and another had fallen into a reservoir with vertical sides.

Distribution. Throughout Southern Rhodesia.

Localities: Trelawney; Salisbury; Chishawasha; Odzi; Tanganda River; Selukwe; Bulawayo; Figtree; Essexvale; Balla Balla; Irisvale; Filabusi; Mavuradona Mts.; Mount Darwin; Glass Block.

MEHELYA NYASSAE (Günther)

Plate 2, upper figure

Simocephalus nyassae Günther, 1888, Ann. Mag. Nat. Hist., ser. 6, vol. 1, p. 328.

Mehelya nyassae Bogert, 1940, p. 25; Isemonger, 1955, p. 69.

Variation. (5 specimens.) Midbody scale rows 15; ventrals 173-184; anal entire; subcaudals 60-68; upper labials 7, the third and fourth entering the orbit; lower labials 8, the first five in contact with the anterior sublinguals; preocular 1; postocular 1; temporals 1+2 or 1+3. Tail length .18 to .20 of the total (but truncated in 2 snakes).

Coloration. Above, blackish brown, skin between scales pink. Below, paler brown, each ventral edged with white.

Size. Largest (NM/M. 1079) 575 (470+105) mm. from Fatima.

Distribution. Widely distributed throughout Southern Rhodesia.

Localities: Fatima; Umtali; Mount Silinda.

NATRICITERES OLIVACEA OLIVACEA (Peters)

Coronella olivacea Peters, 1854, Monatsb. Akad. Wiss. Berlin, p. 622.

Tropidonotus olivaceus Boulenger, 1910, p. 455; FitzSimons, F. W., 1912, p. 82; Tasman, 1953, p. 35.

Natriciteres olivacea olivacea Loveridge, 1953, p. 250 (Generic Key).

Neusterophis olivaceus Rose, 1955, p. 92; Isemonger, 1955, p. 67.

Native Name of Olive Marsh-Snake. *Vusamanzi* (Sindebele).

Variation. (17 specimens.) Midbody scale rows 19; ventrals 140-149; anal divided; subcaudals 63-70; upper labials 8, the fourth and fifth entering the orbit; lower labials 9-10, the first five in contact with the anterior sublinguals; preocular 1; postoculars 3, rarely 2 (both sides of a Selukwe snake); temporals 1+2. Tail length .22 to .28 of the total (but often truncated).

Colouration. Above, dark slate-grey to dark olive, with a dorsal stripe 5 scales wide, which is bordered with minute white dots. This stripe is usually, but not always, darker than the rest of the body; in some specimens it is a handsome maroon shade. Below, yellow or orange, with the outer third of the ventrals on either side slate-grey or olive. Upper labials white with black sutures.

Size. Largest (SM/R. 17) 527 (407+120) mm. from Victoria Falls. Smallest (NM/M. 963) 152 (115+37) mm. from Selukwe.

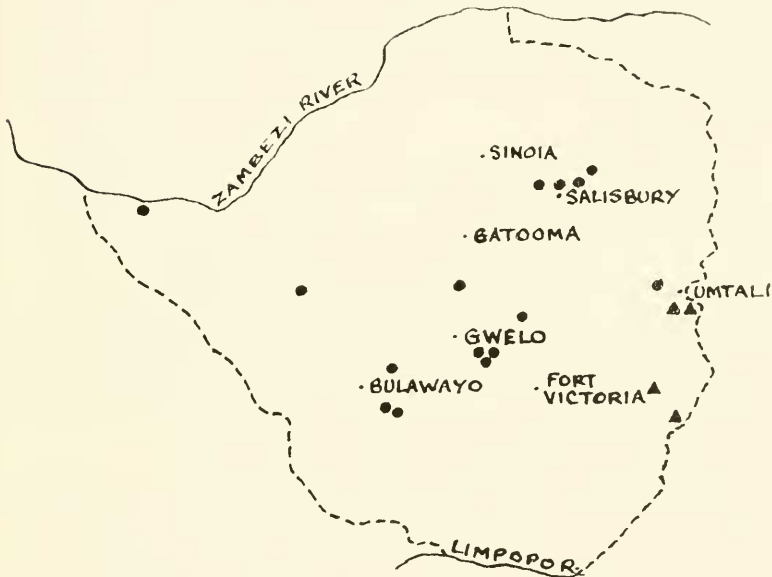


Fig. 1. Recorded localities for *Natriciteres*.

- *Natriciteres olivacea olivacea* (Peters)
- ▲ *Natriciteres olivacea uluguruensis* (Loveridge)

Diet. Captive specimens feed readily on small frogs (*Rana* spp.; *Kassina senegalensis*; *Phrynobatrachus natalensis*) and ranid tadpoles.

Enemies. A high percentage of specimens have truncated tails, due to the attentions of birds of prey, particularly the Hammer-head (*Scopus umbretta*), and crabs.

Habitat. This species prefers vleis and marshes to open streams. One specimen was taken under a stone in a vlei at Mount Hampden and another under a pile of stones in a stream bed at Domboshawa. Two were killed in the foundations of an old bridge demolished at Glen Lorne, Salisbury. At Essexvale, one snake was resting on rocks beside a dam spillway, another was found in a garden. A large specimen turned up on the Guard-room veranda at Lewellin Barracks, Heany.

Distribution. Mashonaland, extending east to Odzi, where it meets with the race *uluguruensis*. North Matabeleland, extending as far south as Essexvale.

Localities: Mount Hampden; Salisbury; Glen Lorne; Domboshawa; Odzi; Victoria Falls; Fatima; Que Que; Driefontein; Selukwe; Heany; Essexvale.

NATRICITERES OLIVACEA ULUGURUENSIS (Loveridge)

Natrix olivacea uluguruensis Loveridge, 1935, Bull. Mus. Comp. Zool., vol. 79, p. 7.

Natrix olivaceus (not Peters) FitzSimons, V. F., 1939, p. 20.

Natriciteres olivacea uluguruensis Loveridge, 1953, pp. 251, 252.

Variation. (12 specimens.) Midbody scale rows 17, rarely 15 (NM/M. 629 from Vumba Mtn. only)¹; ventrals 132-141; anal divided; subcaudals 62-72; upper labials 8, the fourth and fifth entering the orbit; lower labials 8, the first four in contact with the anterior sublinguals; preocular 1; postoculars 3; temporals 1+2. Tail length .26 to .29 of the total.

Colouration. Blackish, slate-grey or olive above, with a darker dorsal stripe 5 scales wide, which is bordered by minute white dots. Below, bright orange or yellow, with the dorsal colouration extending onto the ends of the ventrals. Specimens from Chirinda Forest are described by Dr. V. FitzSimons as grey-brown or reddish above, with a blackish dorsal stripe; yellow to yellowish white below, the ends of the ventrals being grey or bright red, the latter colour extending onto the subcaudals.

Size. Largest (UM/R. 20) 396 (280+116) mm. from Vumba Mountain.

Habitat. One Vumba snake taken beside the spillway of a dam. others under stones beside small dams and another under a stone

¹ Rarely 19 (NM/M. 1952 from Vumba Mtn. only).

on the edge of a strip of riverine forest. Dr. V. FitzSimons took three specimens as they basked on the edges of clearings in the Chirinda Forest.

Distribution. The Eastern Districts of Southern Rhodesia.

Localities: Vumba Mountain; Nyamashatu River; Sabi Experimental Station; Chirinda Forest.

MEIZODON SEMIORNATA SEMIORNATA (Peters)

Coronella semiornata Peters, 1854, Monatsb. Akad. Wiss. Berlin, p. 622.

Data of unique specimen. Midbody scale rows 21; ventrals 184; anal entire; subcaudals 74; upper labials 8, the fourth and fifth entering the orbit; lower labials 8, the first four in contact with the anterior sublinguals; preocular 1; postoculars 2; temporals 1+2. Tail length .24 of the total.

Colouration. Above, grey, with black staggered cross-bars, broad on the neck becoming narrower and fading out soon after midbody. Head black, pre- and postoculars and the labials immediately below them white; a light cross band immediately behind the parietals. Chin white, ventrals and subcaudals black, edged with white.

Size. (NM/M. 870) 345 (262+83) mm. from Sebungwe.

Breeding. This specimen contained two eggs.

Distribution. Probably confined to the Zambezi valley.

Localities: Sebungwe.

PHILOTHAMNUS HOPLOGASTER (Günther)

Ahaetulla hoplogaster Günther, 1863, Ann. Mag. Nat. Hist., ser. 3, vol. 11, p. 286.

Chlorophis natalensis (not Smith), Boulenger, 1902, p. 17.

Chlorophis hoplogaster Boulenger, 1910, p. 507; FitzSimons, F. W., 1912, pp. 86, 87; Hewitt and Power, 1913, p. 162; FitzSimons, V. F., 1939, p. 22; Tasman, 1953, p. 35; Rose, 1955, p. 93; Isemonger, 1955, p. 70.

Chlorophis neglectus Boulenger, 1910, p. 507; FitzSimons, F. W., 1912, pp. 86, 87; Rose, 1955, p. 93; Isemonger, 1955, p. 70.

Philothamnus hoplogaster Broadley, 1957a, p. 53.

Variation. (30 specimens.) Midbody scale rows 15; ventrals 148-160; anal divided; subcaudals 77-103; upper labials 8, the fourth and fifth entering the orbit (an Umtali snake has only 7 labials on one side, the third and fourth entering the orbit);

lower labials 9-11, the first four or five in contact with the anterior sublinguals; preocular 1; postoculars 2; temporals 1+1. Tail length .25 to .30 of the total.

Colouration. Light blue-green to grass-green above, olive-green when about to slough; white below. Some specimens have up to a dozen black blotches on the neck.

Size. Largest (B.M. 02.2.12.87), 945 (685+260) mm. from Mazoe. Smallest (SM/R. 19) 234 (164+70) mm. from Odzi.

Breeding. A 618 mm. ♀ from Cleveland Dam laid 4 eggs on 18.xi.55. A 484 mm. ♀ from the Umvumvumu River laid 4 eggs measuring 28 x 9 mm. on 20.i.57.

Diet. A Cleveland Dam snake fed readily in captivity on frogs (*Rana* spp.; *Hyperolius* spp.) and took a small skink (*Mabuya v. varia*).

Enemies. A Spitting Cobra (*Naja n. mossambica*), captured beside the N'sese River at Irisvale, disgorged the tail of a South-eastern Green Snake. At Selukwe I was given an account of a crab killing and devouring a small green snake, probably referable to this species.

Defence. Unlike the next two species of *Philothamnus*, this snake does not inflate the throat or try to bite when captured.

Habitat. At Salisbury *hoplogaster* frequents the reedy vleis to the west of the city, extending east to Cleveland Dam. In the more open sandveld streams farther east it is replaced by *P. i. irregularis*. The two species occur together in the Eastern Districts and at Selukwe.

Distribution. Common in Mashonaland and the Eastern Districts. Very scarce in Matabeleland.

Localities: Eldorado; Trelawney; Mazoe; Mount Hampden; Salisbury; Cleveland Dam; Odzi; Nyamaropa; Imbeza; Vumba Mountain; Umvumvumu River; Haroni-Lusitu Junction; Chirinda Forest; Selukwe; Driefontein; Umshagashe River; Irisvale; Lumane; Mount Darwin.

PHILOTHAMNUS ORNATUS Bocage

Philothamnus ornatus Bocage, 1872, Jour. Sci. Lisboa, vol. 4, p. 80.

Data of unique specimen. Midbody scale rows 15; ventrals 161: anal divided: subcaudals 96; upper labials 9-10, the fourth, fifth and sixth (normally the third, fourth and fifth) entering the orbit:

lower labials 10, the first five in contact with the anterior sublinguals: preocular 1; postoculars 2; temporals 1+1. Tail length .30 of the total.

Colouration. Emerald green above, with a red-brown dorsal stripe three scales in width, narrowly edged with yellow. The anterior dorsal scales edged with black. Labials and belly white with a bronze tint.

Size. ♂ (NM/M.621) 599 (420+179) mm. from Reitfontein, Salisbury.

Discussion. I found this specimen freshly killed on the road where a bridge spans a vlei on the outskirts of Salisbury. It agrees well with a series of nine *ornatus* collected by Monsieur H. J. Bredo in the Mweru-wa-Ntipa area of Northern Rhodesia and examined by me through the courtesy of the Musée Royal d'Histoire Naturelle de Belgique. The Salisbury snake differs only in having the fourth, fifth and sixth upper labials entering the orbit instead of the third, fourth and fifth as in all nine of Bredo's specimens. The head of this species is more rounded in profile than that of *irregularis* and resembles *hoplogaster* more in this respect. In any case *ornatus* must be restored to specific status; its range in the Rhodesias overlaps that of *P. i. irregularis*, so it can no longer be regarded as a race of the latter.

Distribution. Uncertain.

Localities. Reitfontein, Salisbury.

PHILOTHAMNUS IRREGULARIS IRREGULARIS (Leach)

Coluber irregularis Leach, 1819, in Bowdich, Mission to Ashantee, p. 494.

Chlorophis irregularis Chubb, 1909a, p. 595; 1909b, p. 35; Boulenger, 1910, p. 508; FitzSimons, F. W., 1912, p. 87; FitzSimons, V. F., 1939, p. 22; Bogert, 1940, p. 53; Rose, 1955, p. 94; Isemonger, 1955, p. 70.

Philothamnus irregularis irregularis Broadley, 1957a, p. 53.

Variation. (35 specimens.) Midbody scale rows 15; ventrals 154-169; anal divided; subcaudals 94-115; upper labials 9 (10 on one side only of two snakes), the fourth, fifth and sixth (fifth, sixth and seventh on one side of a Nyamashatu River snake) entering the orbit; lower labials 9-11, the first five (rarely six) in contact with the anterior sublinguals; preocular 1; postoculars 2 (3 on one side of an Imbeza snake); temporals 1+1 or 1+2. Tail length .27 to .33 of the total length.

Colouration. Brilliant emerald green above, some scales on anterior part of body black edged, but not forming regular cross-bars. Below, light green to yellow green. Eye with a handsome golden iris.

Size. Largest (NM/M. 736) 978+ (898+80+) mm. from Umzilizwe River. Largest perfect specimen (NM/M.1471) 1106 (810+296) mm. from Umzilizwe River.

Rate of growth. A Domboshawa ♂ grew from 698 to 763 mm. in 12 months of captivity, during which time he consumed 19 frogs (*Rana*); 9 toads (*Bufo*) and a pigmy mouse (*Leggada* sp.). A Chishawasha ♂ grew from 779 to 798 mm. in 14 months of captivity, during which time he consumed 14 frogs and 13 toads.

Diet. Captive specimens fed readily on frogs (*Rana* spp.; *Hyperolius* spp.; *Phrynobatrachus natalensis*) and toads (*Bufo regularis*; *Bufo carens*); one took a pigmy mouse (*Leggada* sp.).

Defence. When captured or molested, this snake inflates its throat vertically and strikes fiercely. A large Chishawasha ♀ drew blood on my top lip as I was admiring my capture, then she left six rows of bleeding tooth marks on my proffered hand.

Habitat. The Western Green-Snake prefers open, free running streams with plenty of shade. At Chishawasha it was abundant where a small stream flowed between high banks with plenty of overhanging trees. Four of these snakes were killed in the foundations of the demolished bridge at Glen Lorne. One Chishawasha snake was living in a crab hole beside a culvert, where many natives came to wash their clothes. The species is plentiful in reedbeds along the Umzilizwe River and elsewhere in the Eastern Districts. Like *P. hoplogaster* it often rests in small trees overhanging the water.

Distribution. Mashonaland and the Eastern Districts, extending southwest to Selukwe.

Localities: Victoria Falls; Glen Lorne, Salisbury; Domboshawa; Chishawasha; Odzi; Imbeza; Umtali; Umvumvumu River; Umzilizwe River; Chirinda Forest; Selukwe; Moonies Creek; Pungwe River. 2200'; Nyamashatu River.

PHILOTHAMNUS SEMIVARIEGATUS SEMIVARIEGATUS (A. Smith)

Dendrophis (Philothamnus) semivariiegata A. Smith, 1840, Ill. Zool. S. Africa, Rept., pls. lix, lx, lxiv, figs. 1a, 1b.

Philothamnus semivariiegatus Boulenger, 1902, p. 17; 1910, p. 508; Hewitt and Power, 1913, p. 162; Tasman, 1953, p. 35; Rose, 1955, p. 94; Isemonger, 1955, p. 71.

Philothamnus semivariiegatus semivariiegatus FitzSimons, V. F., 1939, p. 22; Broadley, 1957a, p. 53.

Native name of Variegated Bush-Snake. *N'dlondlo* (Sindebele), but is mistaken for a young Boomslang (*Dispholidus typus*).

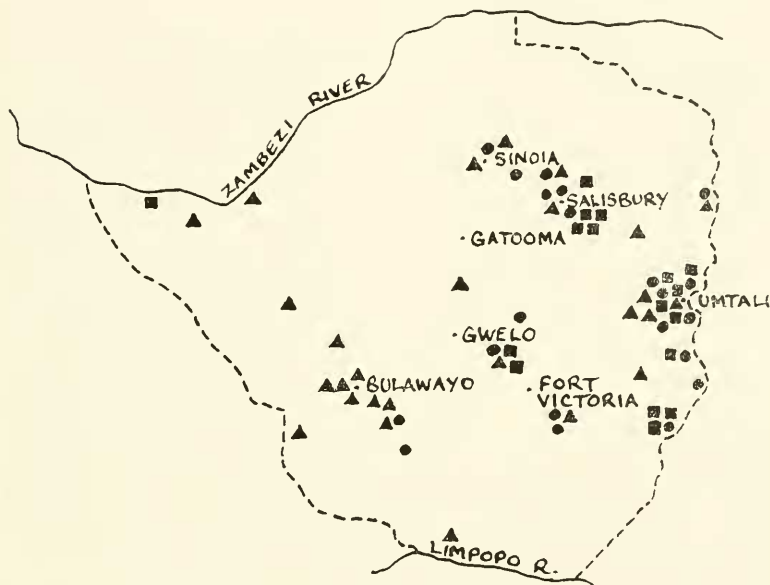


Fig. 2. Recorded localities for *Philothamnus*.

- *Philothamnus hoplogaster* (Günther)
- *Philothamnus irregularis irregularis* (Leach)
- ▲ *Philothamnus semivariiegatus semivariiegatus* (A. Smith)

Variation. (31 specimens.) Midbody scale rows 15; ventrals 179-204; anal divided; subcaudals 121-142; upper labials 9, the fourth, fifth and sixth entering the orbit (10, the fifth, sixth and seventh entering the orbit, on one side only of a Bembesi snake); lower labials 10 (rarely 9), the first five (rarely 4) in contact

with the anterior sublinguals; preocular 1; postoculars 2¹; temporals 1+2 or 2+2. Tail length .28 to .34 of the total.

Colouration. Head blue-green, anterior third of the body blue-green with narrow black cross-bars, fading out to uniform bronze on the posterior of body and tail. Chin white, throat bright yellow, rest of underside cream. Eye with a golden iris.

Size. Largest 1108 (780+328) mm. from Umshagashe River.

Breeding. On 26.i.56 the huge Umshagashe ♀ laid 8 eggs, measuring 26 X 10 mm.

Diet. Captive specimens at Umtali feed freely on dwarf geckos (*Lygodactylus c. capensis*). The Umshagashe ♀ swallowed two frogs (*Rana* sp.), but later disgorged them.

Defence. This snake is extremely truculent and is slow to settle down in captivity. The record specimen was found crawling slowly through the grass beside the Umshagashe River. She made no attempt to dash for cover, but inflated her throat vertically, at the same time lifting her head and neck to display the yellow patch and hissing fiercely. She struck viciously and repeatedly when picked up, drawing blood several times.

Habits. This species is more persistently arboreal than the two previous ones. Tasman (*in litt.*) states, "I have seen one (*P.s. scmviriegatus*) go some way up the somewhat sloping trunk of a gum tree and later make quite a good jump to a lower stump or branch." The Bush-Snake has the same build and strongly keeled ventrals as the "Flying Snakes" (*Chrysopelea*) of Southeast Asia and it may be that it shares their ability to glide from tree to tree. Loveridge received reports of green snakes which behaved in his manner while he was collecting in Tanganyika, where *P.s. scmviriegatus* is common.

Habitat. Most plentiful along shady streams with plenty of trees and bushes. This species is less dependent on water than the other species in the genus, feeding as it does mainly on geckos. I was called to remove a young Essexvale snake from the engine of a lorry, while another is recorded as having been found on the steps of the Bulawayo Public Library!

Distribution. Common throughout Southern Rhodesia, but most abundant in the eastern districts.

¹ One on both sides of a Bembesi Snake (NM/M. 2060).

Localities: Sinoia; Eldorado; Mazoe; Salisbury; Monte Casino; Kondo; Odzi; Umtali; Nyamaropa; Zambezi-Sebungwe Junction; Wankie; Fatima; Moheem Mine; Que Que; Selukwe; Bulawayo; Khami Dam; Essexvale; Irisvale; Empaudene; Umshagashe River; Devuli River Bridge; Beitbridge; Umvuma; Bembesi.

PROSYMNA SUNDEVALLII SUNDEVALLII (A. Smith)

Plate 3, upper figure

Temnorhynchus sundevallii A. Smith, 1849, Ill. Zool. S. Africa, Rept., App., p. 17.

Variation. (2 specimens.) Midbody scale rows 15; ventrals ♂ 154, ♀ 181; anal entire; subcaudals ♂ 28, ♀ 23; prefrontal 1, but a small section split off above one eye in the ♀; internasals 2, separated by a median suture of the prefrontal and rostral; upper labials 6, the third and fourth entering the orbit; loreal 1; preocular 1; postoculars 2; temporals 2+2 or 2+3. Tail length .08 (♀) to .11 (♂) of the total.

Colouration. Purplish-brown above, with a dull red blotch on the frontal and parietals and a broad orange dorsal stripe, which is broken up by darker markings (see Plate). Lower one and a half lateral scale rows and ventrum white.

Size. ♂ (NM/M.1728) 284 (252+32) mm. from 8 miles south of Bulawayo. ♀ (NM/M. 635) 338 (311+27) mm. from Essexvale.

Discussion. Loveridge identified the ♀ as *Prosymna sundevallii bivittata*¹, but Dr. V. FitzSimons has examined the same specimen and regards it as a typical *sundevallii*. The ventral count of 181 is high for typical *sundevallii*, but I refer these snakes to the typical form until such time as further collecting can clarify the position.

Defence. When disturbed this snake coils and uncoils violently to try and intimidate the enemy.

Habitat. The ♀ was found under a stone on the verge of the main Bulawayo-Beitbridge road at Essexvale. The ♂ was taken at night by Mr. V. Hobbs, who found it lying in the middle of the same road, but only 8 miles from Bulawayo.

¹ See Bull. Mus. Comp. Zool., vol. 119, p. 137.

Distribution. Matabeleland.

Localities: 8 miles south of Bulawayo; Essexvale.

PROSYMNA LINEATA (Peters)

Plate 3, lower figure

Temnorhynchus lineatus Peters, 1871, Monatsb. Akad. Wiss. Berlin, p. 568.

Variation. (7 specimens.) Midbody scale rows 15; ventrals ♂ ♂ 147-148, ♀ ♀ 157-170; anal entire; subcaudals ♂ ♂ 26, ♀ ♀ 17-23; prefrontal 1; internasals 2, forming a median suture; upper labials 6, the third and fourth entering the orbit; preocular 1; postoculars 2; temporals 1+2, 2+2 or 2+3. Tail length in the male .11, in the females .07 to .08 of the total.

Colouration. Head pale brown, a darker spot at junction of frontal and parietals, a dull orange blotch on the frontal, a dark line connecting the eyes along the rear edge of the prefrontal, a large dark blotch on the nape immediately behind the parietals. Body pale brown above, a paired vertebral series of dark brown longitudinal streaks, a similar series of lateral streaks; outer two scale rows and ventrum white. An Irisvale ♀ is a much darker brown than the rest.

Size. Largest ♂ (NM/M. 1889) 207 (180+27) mm. from Bulawayo. Largest ♀ (B.M. 02.2.12.00) 307 (282+25) mm. from Salisbury.

Discussion. These specimens were identified as *P. lineata* by Loveridge, but V. FitzSimons regards them as *P. sundevallii* and reports (*in litt.*) that 25 specimens in the Transvaal Museum collection show every stage from internasals in good contact to widely separated. I have not examined any extralimital material, but there certainly seem to be two distinct species in S. Rhodesia, clearly distinguished by scale counts, habitus and colouring. I follow Loveridge¹ and refer these specimens to *P. lineata* until such time as this difficult genus can be fully revised.

Defence. When disturbed, this snake coils and uncoils violently like a watch spring.

Habitat. A small male was discovered on the surface during gravel pit clearing operations on a quartz reef at Balla Balla, where the topsoil was grey sand. An adult ♀ was found lying

¹ See Bull. Mus. Comp. Zool., vol. 119, p. 138.

in the hot sun, beside a road leading to a gravel pit at Government House, Bulawayo. She died a few hours later. Another big ♀ was taken while she was digging a hole in the bare sandy soil of a firebreak at Irisvale.

Distribution. Widely distributed, but scarce.

Localities: Salisbury; Selukwe; Bulawayo; Plumtree; Balla Balla; Irisvale.

PROSYMNA AMBIGUA STUHLMANNI (Pfeffer)

Ligonirostra stuhlmanni Pfeffer, 1893, Jahrb. Hamburg Wiss. Anst., vol. 10, p. 78, pl. 1, figs. 8-10.

Prosymna ambigua (not Boeage) Boulenger, 1902, p. 17; 1910, p. 509; Fitz-Simons, F. W., 1912, p. 88; Isemonger, 1955, p. 71.

Variation. (6 specimens.) Midbody scale rows 15; ventrals 132-153 (162); anal entire; subcaudals 23-31; prefrontal 1; internasal 1; upper labials 6, the third and fourth entering the orbit; preocular 1; postoculars 2; temporals 1+2. Tail length .09 to .16 of total.

Colouration. Black above, each scale with a blue-grey spot. Brownish-black below, chin and throat mottled with white.

Size. Largest ♀ (B.M. 1902.2.12.91) 280 (250+30) mm. from Mazoe.

Habitat. A 258 mm. snake was taken under a stone in leaf mould at the base of a granite kopje at Hillside Dams, Bulawayo.

Discussion. Two ♀ ♀ from Bulawayo have ventral counts of 160 (NM/M. 1944) and 162 respectively; the only race with ventral counts above 160 is *bocagii*, which does not range farther south than the northern Belgian Congo. Perhaps these specimens should be referred to *P. a. transvaalensis* Hewitt, for the types came from Tzaneen, just south of Beitbridge. A higher ventral count in ♀ ♀ is the only feature distinguishing *transvaalensis* (155-158) from *stuhlmanni* (144-155), so it appears likely that the range of ventrals in the latter race will have to be extended to 162 in order to include the Tzaneen and Bulawayo populations. The status of *transvaalensis* cannot be satisfactorily established until further material is available.

Distribution. Widely distributed, but scarce.

Localities: Mazoe; Imbeza; Odzi; Bulawayo; Umtali; Salisbury.

PSEUDASPIS CANA (Linné)

Plate 2, lower figure

Coluber canus Linné, 1758, Syst. Nat., ed. 10, vol. 1, p. 221.

Pseudaspis cana Chubb, 1909a, p. 595; 1909b, p. 35; Boulenger, 1902, p. 17; 1910, p. 507; FitzSimons, F. W., 1912, p. 86; Tasman, 1953, p. 33; Rose, 1955, pp. 86-88; Isemonger, 1955, p. 69.

Variation. (13 specimens.) Midbody scale rows 25-27; ventrals 181-208; anal divided; subcaudals 52-68; upper labials 7, the fourth entering the orbit; preoculars 1-2; postoculars 3; temporals 1+3, 1+4, 2+3, 2+4, 2+5, 3+3 and 3+4. Tail length .13 to .19 of the total.

Colouration. Juveniles: Above, light red-brown with a double row of dark brown dorsal spots, which are usually fused together to form either cross-bars or, more often, a zigzag wavy line. The dorsal markings are flanked by a series of white blotches and there is a further row of dark spots on the sides. The lower three lateral scale rows and the underside are white. Adults: Uniform light grey or pale brown, with black tipped scales (see Plate), lower three rows of lateral scales and underside cream to yellow, the ends of the ventrals often being dark edged.

Size. Largest ♂ 986 (804+182) mm. from Selborne Estates, Iuyanga. Largest ♀ (NM/M. 656) 1230 (1065+165) mm. from Bulawayo.

Sexual dimorphism. In 6 males the range of ventrals is 181-193; range of subcaudals is 62-68; and the tail length is .18 to .19 of the total. In 5 females the range of ventrals is 198-208; range of subcaudals 52-56; and the tail length is .13 to .16 of the total.

Diet. A Nyamandhlovu juvenile contained a shrew (*Crocidura* sp.). A captive Irisvale snake readily constricts and swallows gerbilles (*Tatera* sp.) and other rats. A half-grown Iuyanga snake took a skink (*Mabuya q. margaritifera*) in captivity at Umtali.

Enemies. The young Nyamandhlovu snake was being swallowed by a cobra when found by Mr. D. Young, the donor.

Defence. When disturbed, the Mole Snake coils and hisses loudly, striking viciously if approached.

Habits. An adult ♀ was found freshly killed on the road near Bulawayo at 3 p.m. The Irisvale snake was basking at 10 a.m.

Distribution. Widely distributed, but nowhere common.

Localities: Banket; Mazoe; Salisbury; Monte Cassino; Inyanga; Triashill; Chilimanzi; Driefontein; Sawmills; Nyamandhlovu; Bulawayo; Plumtree; Irisvale; Killarney Mine; Gazuma Pan.

DUBERRIA LUTRIX RHODESIANA Broadley

Duberria lutrix rhodesiana Broadley, 1958, *Oec. Papers Rhod. Mus.*, vol. 22B, p. 215.

Homalosoma lutrix (not Linné) Boulenger (part), 1910, p. 509; FitzSimons, F. W. (part), 1912, p. 90.

Duberria lutrix (not Linné) Tasman, 1953, p. 36; Rose (part), 1955, p. 85; Isemonger (part), 1955, p. 71.

Duberria lutrix lutrix (not Linné) FitzSimons, V. F., 1939, p. 21; 1958, p. 209; Loveridge (part), 1944, p. 144 (Generic revision).

Variation. (18 specimens.) Midbody scale rows 15; ventrals 124-137; anal entire; subcaudals 21-38; upper labials 6, the third and fourth (second, third and fourth on both sides of an Umtali snake) entering the orbit; lower labials 6 (5 on one side of an Umtali snake, 7 on both sides of a Salisbury snake), the first three (two on one side of the Umtali snake) in contact with the anterior sublinguals; loreal 1 (absent on one side only of an Umtali snake); preoculars 1 (2 in an Umtali snake); postoculars 1 (2 in a Vumba Mtn. snake); temporals 1+2. Tail length .10 to .19 of the total.

Colouration. Plumbeous to olive-brown above, with a faint vertebral series of fine dark dashes; bases of lateral scales bluish-white, giving a mottled effect. Below, bluish-white, with a pair of large irregular black blotches situated at the base of each ventral, forming parallel longitudinal rows.

Size. Largest ♂ (NM/M.915.Paratype) 293+ (265+28+) mm. from Umtali. Largest ♀ (NM/M.914.Paratype) 307 (275+32) mm. from Umtali. Smallest (new-born) (NM/M.917.Paratype) 95 (79+16) mm. from Umtali.

Sexual dimorphism. In 8 males the range of ventrals is 124-127; of subcaudals 34-38; and the tail length is .17 to .19 of the total. In 10 females the range of ventrals is 130-137; of subcaudals 21-29; and the tail length is .10 to .12 of the total.

Discussion. Although a number of individual variations are recorded above, this longer series agrees very well with the type series. The race is distinguished from the typical form by the

single postocular (2 in 87 per cent of *lutrix*), lower subcaudal count (21-38 as against 25-51 for *lutrix*), and the ventral markings. It differs from *Duberria l. shirana* in the presence of a loreal.

Breeding. The 307 mm. paratype gave birth to 7 young on 27.xii.56.

Diet. Captive Umtali snakes took slugs. Six of the young snakes mentioned above were swallowed by adult Slug-eaters.

Enemies. An Imbeza snake was disgorged by a cobra (*Naja n. mossambica*).

Habits. A Mount Hampden snake was dug out of leaf mould in a plantation; another was found crossing a footpath at 10 a.m. The Chishawasha holotype was found basking on the roadside at 9 a.m.

Distribution. Restricted to the wetter parts of the colony over 4,500 feet.

Localities: Mount Hampden; Salisbury; Chishawasha; Monte Cassino; Imbeza; Umtali; Vumba Mountain; Tsetsera; Nyamaziwa. Chubb's Bulawayo record of 1909 is rejected; this specimen is not in the National Museum now. The specimen that Fitz-Simons (1939) recorded from Mount Silinda actually came from Vumba Mtn.

TELESCOPUS SEMIANNULATUS SEMIANNULATUS A. Smith

Telecopus semiannulatus A. Smith, 1849, Ill. Zool. S. Africa, Rept., pl. lxxii.

Tarbophis semiannulatus Chubb, 1909a, p. 596; 1909b, p. 35; Boulenger, 1910, p. 510; FitzSimons, F. W., 1912, p. 119; Tasman, 1953, p. 31; Rose, 1955, p. 114; Isemonger, 1955, p. 74.

Variation. (20 specimens.) Midbody scale rows 19; ventrals 202-241; anal divided; subcaudals 58-70; upper labials 8 or 9, rarely 7 (both sides of a Bulawayo snake), the third, fourth and fifth or fourth, fifth and sixth (rarely third and fourth or fourth and fifth) entering the orbit; preocular 1; postoculars 2 (rarely 1 or 3); temporals 2+2 or 2+3. Tail length .13 to .18 of the total.

Colouration. Salmon pink to orange above, with from 26 to 40 black dorsal blotches on body and tail. Pale salmon pink below.

Size. Largest (NM/M. 837) 897+ (795+102+) mm. from Bulawayo. Smallest (NM/M.834b) 246 (205+41) mm. from Bulawayo.

Diet. Geckos (*Pachydactylus p. punctatus*) were recovered from the stomachs of Tjolutjo and West Sebungwe snakes. A Bulawayo snake contained a subadult *Chamaeleo d. dilepis*.

Habitat. A Tiger snake was taken under a boulder on the top of a granite kopje at Hillside Dams, Bulawayo.

Distribution. Widely distributed throughout Southern Rhodesia.

Localities: West Sebungwe; Zambezi River; Odzi; Umtali; Selukwe; Tjolutjo; Sawmills; Ungusa Valley; Bulawayo; Valindre; Cyrene; Plumtree; Empandene; Balla Balla; Freda Mine.

CROTAPHOPELTIS HOTAMBOEIA HOTAMBOEIA (Laurenti)

Coronella hotamboeia Laurenti, 1768, Syn. Rept., p. 85.

Leptodira hotamboeia Chubb, 1909a, p. 596; 1909b, p. 35; Boulenger, 1910, p. 510; FitzSimons, F. W., 1912, p. 120; Hewitt and Power, 1913, p. 163.

Crotaphopeltis hotamboeia Tasman, 1953, p. 31; Rose, 1955, p. 112; Isemonger, 1955, p. 74.

Crotaphopeltis hotamboeia hotamboeia FitzSimons, V. F., 1939, p. 22.

Native name for the White-lipped Snake. *Pimpi* (Sindebele), but as a result of mistaking this for a young cobra, to which this name is properly applied.

Variation. (65 specimens.) Midbody scale rows 19, rarely 18, 20 or 21 (one snake with each figure); ventrals 154-168; anal entire; subcaudals 30-46; upper labials 8, the third, fourth and fifth, or fourth and fifth, entering the orbit (rarely 7, the third and fourth entering the orbit); lower labials 9-10, the first four or five in contact with the anterior sublinguals; preocular 1; postoculars 2; temporals 1+2, rarely 1+1. Tail length .11 to .15 of the total.

Colouration. Plumbeous to olive above, usually with numerous tiny white flecks, which are only prominent when the body is inflated in anger. Sides of head iridescent blue-black, upper labials and underside white.

Size. Largest ♂ 616 (535+81) mm. from Essexvale. Largest ♀ 702+ (610+92+) mm. from Nyamaropa. Smallest (NM/M. 587) 143 (123+20) mm. from Selukwe.

Diet. Stomachs examined contained amphibian remains. Captive snakes took toads and frogs (*Bufo regularis*; *Bufo carens*; *Kassina senegalensis*; *Phrynobatrachus natalensis*; *Rana d. delalandii*; *Xenopus l. levis*).

Parasites. Mites (*Ophionyssus natricis*) on an Essexvale snake.

Defence. When molested, this snake coils up, flattening the head to show off the iridescent black temporal patches and inflating the body, to display numerous white flecks which are normally concealed. If approached, the snake strikes viciously and repeatedly. If allowed to bite a finger, it chews vigorously, leaving a row of bleeding fang punctures.

Venom. The bite of this species can be regarded as harmless to man. Numerous bites from specimens up to two feet in length have all produced the same effects. The actual bite is painful and followed by local smarting. The fang punctures bleed freely, which must soon flush all the venom from the system. The bleeding stops within a few minutes and there are no after effects. On one occasion I induced an 18" snake to bite the tip of my little finger. The snake was more ambitious and started to swallow the digit, reaching the second joint before I disengaged him with some difficulty. The experience was rather painful, for as each side of the jaw "walked" forward in turn the corresponding fang was driven deep into the flesh. The same thing happens when the White-lipped Snake swallows its prey.

Habits. This species is strictly nocturnal. Several were picked up at night during the rains, but most specimens were found under stones. While collecting sedge frogs (*Hyperolius* spp.) along the Umzilizwe River at night, a *Crotaphopeltis* was found 18" from the ground, in a shrub that harboured several frogs. A few yards away another snake was climbing the rough bark of a tree and was about two feet off the ground.

Distribution. Common throughout Southern Rhodesia.

Localities: Victoria Falls; Sinoia; Eldorado; Trelawney; Mount Hampden; Salisbury; Nyamaropa; Odzi; Untali; Rowa Division; Gatooma; Que Que; Driefontein; Selukwe; Bulawayo; Syringa; Essexvale; Balla Balla; Irisvale; Lumane; Mazeppa Mine, Gwanda; Mount Silinda; Umzilizwe River; Turk Mine; Cyrene; Mount Darwin.

CHAMAETORTUS AULICUS AULICUS Günther

Chamaetortus aulicus Günther, 1864, Proc. Zool. Soc. London, p. 310; Zambezi; FitzSimons, F. W., 1912, p. 120.

Discussion. This rare species was originally described by Günther from a specimen collected on the Zambezi by Sir John Kirk. F. W. FitzSimons included Southern Rhodesia within its range in his "Snakes of South Africa." As *Chamaetortus* is known from Mozambique and N. E. Transvaal it may well occur in the eastern districts of Southern Rhodesia. East African specimens are usually associated with bamboos or palms.

DISPHOLIDUS TYPUS (A. Smith)

Bucephalus typus A. Smith, 1829, Zool. Journ., vol. 4, p. 441.

Dispholidus typus Boulenger, 1902, p. 18; 1910, p. 515; Gough, 1908, p. 33; Chubb, 1909a, p. 596; 1909b, p. 36; FitzSimons, F. W., 1912, p. 127; FitzSimons, V. F., 1939, p. 23; Tasman, 1953, p. 29; Rose, 1955, pp. 105-107; Isemonger, 1955, p. 73.

Native Name of Boomslang. *N'dlondlo* (Sindebele); *Coracundu* (Cheshona).

Variation. (87 specimens.) Midbody scale rows 19, rarely 17 (one Salisbury snake) or 21 (3 specimens); ventrals 171-196; anal divided; subcaudals 104-130; upper labials 7, rarely 8, the third and fourth (rarely fourth and fifth or fourth only) entering the orbit; lower labials 8-12, the first four (rarely three or five) in contact with the anterior sublinguals; preocular 1; postoculars 3, rarely 4; temporals 1+2, rarely 1+1 or 2+2. Tail length .25 to .30 of the total.

Colouration. Juveniles: Head uniform brown or blackish above, upper labials and chin white, uniform or more often speckled with black. Body blackish above, with numerous small blue spots, situated at the tips of dorsal scales and arranged in pairs vertically. These spots normally only appear as "warning colouration" when the body is inflated in anger. Sides of body greyish, passing to white below, very heavily peppered with dark maroon or grey to resemble a lichen covered branch. Iris of eye brilliant emerald green.

Adult males: Usually bright leaf green above, with black-edged scales and ventral scutes. A Fatima specimen had the head vermiculated with black. Some specimens from the eastern

districts are uniform leaf green or blue-green. Several males from the Essexvale area are dark olive-green above and pale blue below. A single male from Essexvale was olive-brown. Iris of eye grey.

Adult females: Usually blackish-brown to olive, pale "biscuit" brown or light grey above. Below, dirty white to pale olive. Iris of eye grey or brown.

Size. Largest ♂ (UM/R.21) 1750 (1290+460) mm. from Umtali. Largest ♀ (NM/M.413) 1625 (1210+415) mm. from Essexvale.

Breeding. A pair of captive Boomslangs were found in coitu on 29.i.56.

Diet. The full stomachs examined all contained chamaeleons (*Chamaeleo d. dilepis*) except two, which contained three fledglings. A black ♀ Boomslang, just over five feet in length, lived for 21 months in captivity. In that time she consumed 25 chamaeleons, 3 agamas (*Agama h. distanti* and *Agama kirkii fitzsimonsi*), 1 dead snake (*Psammophylax t. tritaeniatus*), 6 fledglings. Only one snake, a ♂ captured swimming in a small stream at Odzi, would take frogs (*Rana* spp.). A dark olive ♂ from Balla Balla took dead rats readily, but rodents were ignored by eight other Boomslangs in the cage. Birds' eggs were taken readily when offered. Other lizards taken by captive snakes were: *Mabuya s. striata*; *Mabuya q. margaritifer* and *Agama cyanogaster* (juvenile).

Defence. The Boomslang is normally good natured, but when roused to anger first the throat, then the whole body, is inflated with air, making the snake appear twice its normal size. If further molested, the snake strikes with gaping jaws almost in one plane, so although the fangs are situated below the eye, it is not difficult for an adult snake to bring them into action. The fangs are approximately $\frac{1}{4}$ " in length, longer than in a cobra of the same size. Although this species is probably the commonest snake in Southern Rhodesia, bites are extremely rare. The Boomslang dashes to the top of the nearest tree at the least sign of danger and is seldom encountered at close quarters except by the herpetologist.

Venom. An adult snake normally takes about 20 minutes to kill a full-grown chamaeleon, longer than does a Vine Snake

(*Thelotornis*). The venom may be more effective against warm-blooded prey, as fledglings die quickly and the effects on a human are very severe if not fatal.

Habits. Mainly arboreal, often staying in the same tree, or group of trees, for several days. I have taken several along stream banks, where they were presumably searching for frogs. Large numbers are killed on the roads, which indicates the abundance of the species.

Distribution. Abundant throughout Southern Rhodesia.

Localities: Trelawney; Mazoe; Mount Hampden; Salisbury; Lake Mellwaine; Odzi; Old Umtali; Umtali; Que Que; Gatooma; Selukwe; Lukosi; Fatima; Turk Mine; Bulawayo; Empandene; Essexvale; Balla Balla; Irisvale; Stanmore; Beitbridge; Mtao Forest; Dadaya; Shabani; Lundi River; Nyaratedzi River; Birehenough Bridge; Mount Silinda; Chirinda Forest; Mount Darwin.

THELOTORNIS KIRTLANDII OATESII (Günther)

Dryophis Oatesii Günther, 1881, in Oates, Matabeleland and the Victoria Falls, App., p. 330, col. pl. D: Matabeleland, Southern Rhodesia.

Thelotornis kirtlandii (not Hallowell) Boulenger, 1896, p. 185; 1910, p. 515; Chubb (part), 1909a, p. 596; 1909b, p. 36; FitzSimons, F. W. (part), 1912, p. 126; Hewitt and Power, 1913, p. 164; Isemonger (part), 1955, p. 78.

Thelotornis kirtlandii capensis Loveridge (part), 1944, p. 154 (generic revision); Broadley (part), 1957c, p. 297.

Thelotornis kirtlandii oatesii Loveridge, 1953, pp. 277-279.

Native name of Oates' Vine-Snake. *Kotikoti* (Sindebele).

Variation. (11 specimens.) Midbody scale rows 19; ventrals 163-174; anal divided; subcaudals 140-159; upper labials 8, the fourth and fifth entering the orbit; lower labials 11-12, the first four in contact with the anterior sublinguals; preocular 1; post-oculars 3, rarely 4; temporals 1+2, rarely 1+3. Tail length .36 to .38 of total.

Colouration. Top of head pale green speckled with pink and black, this speckling is normally restricted to a Y-shaped marking, whose stem lies along the interparietal suture and its arms extend across the posterior portion of the frontal to the supra-oculars (in a Matopos specimen the speckling extends along the frontal to the internasals). A band of pink, black-edged, scales

runs from the nostril through the orbit and lower temporals to the back of the head. Upper labials are white with a black streak extending from the eye to the full width of the sixth labial; there is usually a row of black spots on the lips. Chin white, the lower labials heavily speckled with black. Body light grey with diagonal cross bars of whitish blotches; the sides are adorned with scattered touches of pink or orange and black. Ventrums pinkish-white heavily mottled with dark grey. On the sides of the neck are one or two vivid black blotches.

Size. Largest (NM/M.972) 1417 (900+517) mm. from Gatooma.

Diet. A Matopos snake contained an immature Plated Rock-Lizard (*Gerrhosaurus v. validus*). The large Gatooma snake recorded above lived for 6 months in captivity before being killed by a large Boomslang (*Dispholidus typus*) in a dispute over a chamaeleon. In that time she consumed 11 *Chamaeleo d. dilepis*, an *Agama h. distanti* and two bird's eggs.

Defence. When molested the Vine-Snake inflates its throat enormously to display the vivid black and white markings. If further tormented it strikes viciously with gaping jaws.

Venom. See under *Thelotornis k. capensis*.

Distribution. Northwestern parts of Southern Rhodesia, extending south to a line Matopos-Bulawayo-Gatooma-Norton which more or less follows the principal watershed.

Localities: Trelawney; Downington Farm, Norton; Gatooma; Bulawayo; Khami Dam; Matopos; Karoi.

THELOTORNIS KIRTLANDII CAPENSIS A. Smith

Thelotornis capensis A. Smith, 1849, Ill. Zool. S. Africa, 3, App., p. 19.

Thelotornis kirtlandii (not Hallowell) Chubb (part), 1909a, p. 596; 1909b, p. 36; FitzSimons, F. W. (part), 1912, p. 126; FitzSimons, V. F., 1939, p. 23; Tasman, 1953, p. 29; Isemonger (part), 1955, p. 78.

Thelotornis kirtlandii capensis Loveridge (part), 1944, p. 154 (generic revision); Broadley (part), 1957c, p. 297.

Thelotornis (sic) kirtlandii, Rose, 1955, pp. 114-119.

Native name of Cape Vine-Snake. *Kotikoti* (Sindebele); *Kumtumuti* (Cheshona).

Variation. (38 specimens.) Midbody scale rows 19; ventrals 146-163; anal divided; subcaudals 127-166; upper labials 8,

rarely 9, the fourth and fifth entering the orbit; lower labials 11-12, the first four in contact with the anterior sublinguals; preocular 1; postoculars 3, rarely 2; temporals 1+2, rarely 1+3. Tail length .33 to .40 of total.

Colouration. As in *Thelotornis k. oatesii*, except that in specimens from the south (Balla Balla-Lumane) the speckling extends over the whole of the top of the head. However, specimens from the Eastern Districts have either uniform green heads or the markings are reduced to a few spots arranged in the Y-shape typical of *oatesii*. The pink and black band on the side of the head is replaced by a uniform dark brown streak. Tanganyika specimens are similar. Because of this confusion in head markings the two forms can only be distinguished by their ventral counts¹.

Size. Largest 1440 (910+530) mm. from Umtali. Smallest (NM/M.613) 637 (410+227) mm. from Selukwe.

Diet. An Irisvale snake was swallowing a young Tree Agama (*Agama cyanogaster*) when captured. Captive specimens fed readily on lizards (*Mabuya s. striata*; *Mabuya q. margaritifera*; *Agama h. distantis*; *Agama h. armata*; *Agama cyanogaster*; *Platysaurus g. rhodesianus*), chamaeleons (*Chamaeleo d. dilepis*) and frogs (*Rana* spp.). Although birds and their eggs were occasionally taken, cold-blooded prey seems to be preferred.

Defence. See under *Thelotornis k. oatesii*.

Venom. On 1.x.57 I spotted a pair of Vine-Snakes mating in a tree at Lumane. As I tried to get both snakes into the bag at the same time, while perched at the top of the tree, the larger snake fastened on to the middle finger of my right hand. I descended to the ground and had some difficulty in disengaging the snake's fangs. The time was 3.30 p.m. I sucked the bite and then went after the second snake which I had been obliged to release. Although I failed to dislodge it from a thick bush I finally captured it two days later in the original tree. The finger was slightly swollen after half an hour and there was some slight haemorrhage from the fang punctures by 5 p.m. By 9 o'clock the finger was very swollen and discoloured at the joint. There was persistent haemorrhage from the fang punctures and teeth

¹ In 8 specimens of *capensis* from Zululand, which may be considered topotypes, the head speckling is confined to the Y-shape characteristic of *oatesii*!

marks, also from numerous scratches on my legs (received while climbing the thorn tree after the snakes) and small shaving cuts. There was no pain whatsoever. The haemorrhage continued all night and all the next day. The blood was very slow to clot and I left pools of blood wherever I went. There were purple patches round all cuts, etc. By 9 p.m. on the 2nd the haemorrhage was easing off and confined to the scratches on my legs. The bleeding had stopped altogether by the next morning although the finger

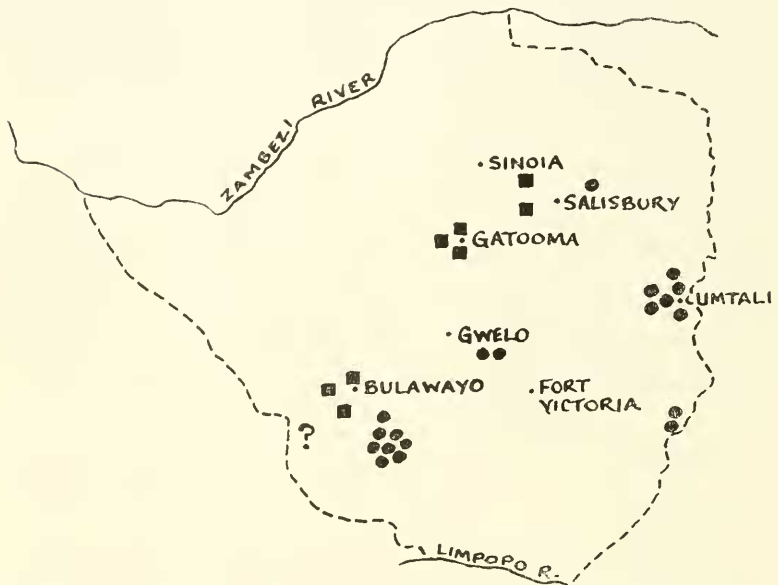


Fig. 3. Recorded localities for *Thelotornis*.

- *Thelotornis kirtlandii oatesii* (Günther)
- *Thelotornis kirtlandii capensis* A. Smith

was still swollen and the hand puffy. There was slight bleeding from the fang punctures about 7 p.m. There was no haemorrhage on the 4th and the hand started to return to normal the following day.

I think that the numerous cuts and scratches on my body acted as safety valves and prevented the dreadful internal haemorrhage

which was a prominent feature when F. J. de R. Loek died from a *Thelotornis* bite in Tanganyika¹. The snake concerned in the latter case was a juvenile 2'5" in length; I was bitten by an adult of just over 4 feet.

Habits. This species is abundant in the dry Mopani bush at Lumane where there is very little undergrowth. It is also plentiful at Irisvale and in the Eastern Districts, where the vegetation is more varied and provides better cover. The snakes are usually found in bushes or on dead tree stumps not far from the ground where they can spot any lizards or frogs passing below. They remain motionless even when passed within a few inches.

Distribution. Southeastern districts of Southern Rhodesia, extending as far north as a line Balla Balla-Selukwe-Salisbury.

Localities: Salisbury District; Odzani; Odzi; Umtali; Selukwe; Balla Balla; Irisvale; Sinkukwe; Lumane; Mount Silinda; Pungwe River, 2400'. The specimens recorded from Empandene by Chubb (1909b) probably belong to this race, but are now missing from the National Museum collection.

HEMIRHAGERRIHS NOTOTAENIA NOTOTAENIA (Günther)

Coronella nototaenia Günther, 1864, Proc. Zool. Soc. London, p. 309, pl. xxvi, fig. 1.

Amplorhinus nototaenia Hewitt, 1913, p. 481.

Hemirhagerrhis nototaenia Isemonger, 1955, p. 75.

Variation. (6 specimens.) Midbody scale rows 17; ventrals 164-168; anal divided; subcaudals 72-83; upper labials 7 or 8, the third and fourth or fourth and fifth entering the orbit; lower labials 9, the first four in contact with the anterior sublinguals; preocular 1; postoculars 2; temporals 1+2, rarely 1+3. Tail length .23 to .27 of the total.

Colouration. Dark ash grey or grey-brown above; top of head black, continuing as a vertebral stripe about three scales in width, which is black on the neck, but less well defined on the rest of the body. A row of black spots merges with the vertebral stripe on either side. These may be opposed to form cross-bars or alternated to form a zigzag. A dark streak on either side of the head passes through the eye and fades out on the neck. Below, mottled in ash grey or grey-brown and dirty white.

¹ See Loveridge (1956), pp. 12-13.

Size. Largest (UM/R.332) 370 (280+90) mm. from Mount Darwin.

Habitat. A Bark-Snake was taken at 11 a.m. as it was crawling on the ground under Mopani trees with no undergrowth. This was in the Wedza Reserve, between the Macheke and Sabi rivers (W. Armitage).

Distribution. Found in the low-lying river valleys of Southern Rhodesia. The species seems to be closely associated with dry Mopani bush.

Localities: Zambezi River, 40 miles east of Chirundu; Matetsi; Macheke-Sabi Junction, Wedza Reserve; Devon Farm, Odzi River; Ramaquabane River; Beitbridge; Mount Darwin.

AMPLORHINUS MULTIMACULATUS A. Smith

Amplorhinus multimaculatus A. Smith, 1847, Ill. Zool. S. Africa, Rept. pl. lxii. FitzSimons, V. F., 1958, p. 209.

Variation. (2 specimens.) Midbody scale rows 17; ventrals 140-141; anal entire; subcaudals 58-75, the anterior five single, the remainder paired; upper labials 8, the fourth and fifth entering the orbit; five lower labials in contact with the anterior sublinguals; preocular 1; postoculars 2; temporals 2+2. Tail length .22 of total.

Colouration. Dark green to olive green above, with a paler dorsolateral and a longitudinal series of elongate black spots on either side; scattered scales narrowly edged with bluish white, especially over anterior half of body; upper labials each bearing a yellowish-white spot or irregular vertical streak. Chin yellow to yellowish-white, scales edged with bluish grey; underside of body and tail uniform bluish grey (V. F. FitzSimons).

Size. Largest (T.M.22407) 488 (383+105) mm. from Pungwe River Causeway.

Distribution. Mountains on the eastern border of Southern Rhodesia.

Localities: Nyamaziwa; Pungwe River Causeway.

PSAMMOPHYLAX TRITAENIATUS TRITAENIATUS (Günther)

Rhagerrihis tritaeniatus Günther, 1868, Ann. Mag. Nat. Hist., ser. 4, vol. 1, p. 423, pl. xix, fig. 8.

Coronella tritacnia, Günther, 1881, in Oates, Matabeleland, p. 329, pl. C.

Trimerorhinus tritaeniatus, Boulenger, 1896, p. 139; 1902, p. 18; 1910, p. 512; Chubb, 1909a, p. 596; 1909b, p. 35; FitzSimons, F. W., 1912, p. 121; Hewitt and Power, 1913, p. 163; Tasman, 1953, p. 33; Rose, 1955, p. 111; Isemonger, 1955, p. 76.

Psammophylax tritaeniatus, Broadley, 1956, p. 215.

Native name of Three-lined Grass-Snake. *N'shwazi* (Sindebele), but also applied to *Psammophis s. subtacniatus*.

Variation. (56 specimens.) Midbody scale rows 17; ventrals 150-168; anal divided; subcaudals 54-67; upper labials 8, the fourth and fifth entering the orbit; lower labials 9-11, the first five, rarely four or six, in contact with the anterior sublinguals; preocular 1; postoculars 2; temporals 2+3, rarely 2+2¹. Tail length .19 to .22 of the total.

Colouration. Top of head light brown; vertebral scale row dark brown, the superior halves of the scales flanking it are black, forming a sharp-edged vertebral stripe 2 scales wide; this is flanked by a pale brown, grey or yellowish stripe 3 scales wide followed by another dark brown, black-edged stripe 3 scales wide, which begins at the snout and runs through the eye; outer 1½ scale rows white, with a broken orange or pinkish line running through the outer row. Upper labials, chin and throat white; underside white, cream or lemon yellow, with some salmon or pink flecking at the ends of the ventrals.

Size. Largest (SM/R.70) 851 (680+171) mm. from Salisbury. Smallest 172 (140+32) mm. from Essexvale.

Breeding. A captive ♀ from West Nicholson, 728 mm. in length, laid 4 eggs between 27th and 30th November, when she died with 10 eggs still in her ovaries.

Dict. The huge Salisbury specimen, recorded above, contained a partially digested rat. Captive specimens took mice (*Rhodomys* and *Leggada* sp.); lizards (*Chamaeleo d. dilepis* juv.; *Mabuya s. striata*; *Mabuya v. varia*; *Mabuya q. margaritifera*; *Agama h. distantis*), and frogs (*Kassina senegalensis*; *Breviceps mossambicus*; *Rana* spp.).

Enemies. A juvenile was found swimming alongside a drift on the Umgusa River, near Bulawayo. It had been cut clean in half just forward of the vent, almost certainly the work of one of the numerous crabs living in the drift.

Defence. This species rarely attempts to bite when captured.

Habits. When basking, this snake's body becomes kinked in a most unnatural manner. The first time I observed this phenomenon was when I found a 20" specimen basking on a sand-bank of the Hunyani River at Sinoia. I thought that the snake was dead and it made no movement until I picked it up, appearing to be completely oblivious of its surroundings. I have since observed the same behaviour in many snakes both in captivity and in the wild state. This habit may account for many of the Striped Grass-Snakes killed on the roads and must make the species very vulnerable to the numerous birds of prey.

Distribution. Common throughout Southern Rhodesia.

Localities: Sinoia; Mazoe; Mount Hampden; Salisbury; Hunyani; Monte Cassino; Odzi; Umtali; Que Que; Driefontein; Selukwe; Bembesi; Bulawayo; Khami; Plumtree; Empandene; Essexvale; Balla Balla; Glass Block; Stanmore; West Nicholson; Mount Silinda; Mount Darwin; Umvuma.

RHAMPHIOPHIS OXYRHYNCHUS ROSTRATUS Peters

Rhamphiophis rostratus Peters, 1854, Monatsb. Akad. Wiss. Berlin, p. 624. Isemonger, 1955, p. 79, pl. opp. p. 36.

Rhamphiophis oxyrhynchus (misprint), Tasman, 1953, p. 33.

Variation. (4 specimens.) Midbody scale rows 17; ventrals 165-186; anal divided; subcaudals 100-105; upper labials 8, the fifth entering the orbit; lower labials 10-12; the first four or five in contact with the anterior sublinguals; preoculars 3; postoculars 2; temporals 2+3; 3+4. Tail length .29 to .31 of the total.

Colouration. Pale brown above, each scale edged with darker brown. White below.

Size. Largest (NM/M.1817) 1280 (880+400) mm. from Mavuradona Mts.

Distribution. Restricted to the dry sandveld at the lower altitudes.

Localities: Mtoko; Matetsi; West Sebungwe; Fatima; Lupane; Beitbridge; Mavuradona Mts.; Mount Darwin.

DROMOPHIS LINEATUS (Duméril and Bibron)

Dryophylax lineatus Duméril and Bibron, 1854, Erpet. Gen., 7, p. 1124.

Data of unique specimen. Midbody scale rows 17; ventrals 149; anal divided; subcaudals ?; upper labials 8, the fourth and

fifth entering the orbit; first four lower labials in contact with the anterior sublinguals; preocular 1; postoculars 2; temporals 1+2.

Colouration. Head dark brown above, two light hair-lines crossing back of head; pre- and postoculars yellow; upper labials and chin greenish white. Body grey-brown above; the vertebral scale row lighter, the next three rows edged with black, then a faint lighter stripe merging into grey-brown below; the outer row of scales edged with the black above and yellowish-white below. Ventrals yellowish-white, a black *transverse* marking at the end of each ventral for the anterior two-thirds of the body. Subcaudals bluish-white.

Size. (NM/M.529) 705+ (600+105+) mm. from Nampini.

Diet. This snake was swallowing a rat when it was shot by Mr. M. P. Stuart Irwin on the bank of the Zambezi.

Distribution. This is the most southerly specimen yet recorded. Mr. Irwin suggests that the distribution of this species may, like that of some bird species, be linked with the Papyrus swamps, which do not extend downstream below Nampini. Extralimitally this snake may occur in the swamps of the Chobe River, the border of Bechuanaland and the Caprivi Strip.

Localities: Nampini.

PSAMMOPHIS SIBILANS SIBILANS (Linné)

Coluber sibilans Linné (part), 1758, Syst. Nat., ed. 10, p. 222.

Psammophis thomasi Gough, 1908, p. 30, fig.

Psammophis sibilans Boulenger, 1902, p. 18; 1910, p. 514; Chubb, 1909a, p. 596; 1909b, p. 36; FitzSimons, F. W., 1912, pp. 123, 125; Hewitt, 1912, p. 273; Tasman, 1953, p. 33; Rose, 1955, p. 108; Isemonger, 1955, p. 77.

Psammophis furcatus (not Peters) Boulenger (part), 1910, p. 513; FitzSimons, F. W. (part), 1912, pp. 122, 123; Hewitt (part), 1912, p. 270.

Psammophis sibilans sibilans Loveridge, 1940, p. 30 (generic revision).

Native name of the Olive Grass-Snake. *N'dlondlo* (Sindebele), but confused with the brown phase of *Dispholidus typus*.

Variation. (35 specimens.) Midbody scale rows 17; ventrals 167-177; anal divided; subcaudals 92-107; upper labials 8 (9 on one side of an Essexvale snake), the fourth and fifth entering the orbit; lower labials 9-10, the first four in contact with the anterior sublinguals; preocular 1; postoculars 2; temporals 2+2,

2+3, rarely 2+1 (through fusion on both sides of two snakes). Tail length .26 to .31 of the total.

Colouration. Head brown above, uniform, or with an intricate pattern of chestnut markings; sides of head brown, preocular sometimes yellow, lower half of upper labials yellow, usually spotted with black; chin and throat yellow, speckled with black or with a series of black-edged ocelli on the lower labials. Body grey-brown to olive above, uniform, or with a series of narrow black dorsal stripes formed by black scale edgings, the vertebral scale row often lighter than the rest. Yellow to white below, uniform, or with a double row of obscure olive blotches.

Size. Largest (SM/R.34) 1740 (1253+487) mm. from Salisbury.

Sexual dimorphism. The sexes cannot be separated on scale counts. Sexing is made difficult by the small size of the hemipenes. The everted hemipenes of a 1466 mm. Essexvale ♂ were only 12 mm. in length and 2 mm. in diameter.

Breeding. On 2.x.57 a 1197 mm. Bulawayo ♀ laid 19 eggs, which hatched on 22.ii.58.

Diet. Stomachs examined contained skinks (*Mabuya s. striata*) and a frog (*Rana* sp.). Captive specimens took rats, lizards (*Mabuya s. striata*; *Mabuya v. varia*; *Ichnotrophis capensis*) and frogs (*Rana d. delalandii*; *Phrynobatrachus natalensis*)¹.

Venom. I have been bitten three times by adult snakes while catching them. Full bites from a 3-foot Essexvale snake and a 4-foot Bulawayo snake produced in each case only slight local pain and inflammation, which passed off within an hour. On 16.viii.57 I captured a 3'9" ♂ at Bulawayo. I had dug the snake out of a pile of thornbush and debris and was lying on the ground under the thorn branches when I seized the snake, who promptly fastened onto my finger and chewed. It took me a minute or two to back out of my tunnel and disengage the snake's fangs from the base of my finger. After 10 minutes the finger started to swell up and I scarified and sucked the punctures. The whole hand was swollen and tender within an hour, but there was no pain. The swelling started to subside after 24 hours and was back to normal after 48 hours.

¹ A four-foot specimen, captured by D. S. Rider at Umvuma, disgorged a juvenile mamba (*Dendroaspis p. polycephis*) a little over two feet in length.

Habits. This is a very active snake, and as it usually frequents reedbeds or long grass in vleis, it is not easy to capture. When pursued, it makes a short dash and then lies low until you are on top of it, then it makes another dash. This goes on until the snake eventually escapes into thick cover or a reedbed. Although it usually bites when captured, this species settles down very rapidly in captivity and likes being handled. Several of my specimens have learned to associate my appearance with food. They will come to the cage door and take lizards and frogs from my fingers. I captured one snake at Mount Hampden while it was engaged in swallowing a lizard (*Mabuya s. striata*). I put snake and lizard in the same bag and when I got home I discovered that the lizard was inside the snake!

Habitat. Although probably the best known species in the genus, *Psammophis s. sibilans* is definitely not a sand snake and I have never heard one hiss! "Hissing Sand-Snake," the direct translation of the scientific name, is most inappropriate and should be dropped. This species is restricted to shady localities along rivers and in vleis, orchards and similar situations. I found it abundant along the Umzilizwe River, below Mount Selinda, where specimens seem to attain a greater average length than usual. A specimen from the Umgusa River, Bulawayo, was dug out of a termitarium.

Distribution. Found throughout Southern Rhodesia, where conditions are suitable.

Localities: Sinoia; Mazoe; Mount Hampden; Salisbury; Hunyani; Kutama; Norton; Selukwe; Gwamayaya River; Fatima; Crosby Farm; Inyati; Bulawayo; Essexvale; Irisvale; Odzi; Umtali; Threespanberg Pass; Chipinga; Umzilizwe River; Mount Darwin; Umvuma.

PSAMMOPHIS SUBTAENIATUS SUBTAENIATUS Peters

Psammophis sibilans var. *subtaeniata* Peters, 1882, Reise nach Mossambique, 3, p. 121.

Psammophis subtaeniatus Chubb, 1909a, p. 596; 1909b, p. 35; Hewitt, 1912, p. 274; FitzSimons, V. F., 1939, p. 23; Tasman, 1953, p. 53.

Psammophis bocagii Boulenger, 1910, p. 514; FitzSimons, F. W., 1912, pp. 123, 124.

Psammophis notostictus (not Peters) Isemonger, 1955, p. 76.

Native name of Stripe-bellied Sand-Snake. *N'shwazi* (Sindebele), but also applied to *Psammodromus t. tritaeniatus*.

Variation. (35 specimens.) Midbody scale rows 17; ventrals 158-175; anal divided; subcaudals 105-123; upper labials 9, the fourth, fifth and sixth entering the orbit (except for 3 snakes from South Bulawayo and Filabusi, which agree with the northern race *sudanensis* in having 8 upper labials, the fourth and fifth entering the orbit); lower labials 9-10, the first four in contact with the anterior sublinguals; preocular 1; postoculars 2 (3 on one side of a Beitbridge snake); temporals 2+2 or 2+3 (1+1 on one side of a Balla Balla snake; 1+2 on one side of a Hope Fountain snake). Tail length .32 to .36 of the total.

Colouration. Head above brown, uniform, or more often with a series of grey transverse markings, which continue onto the neck as a series of cross-bars; upper labials, chin and throat white, liberally speckled with black (immaculate lemon yellow in a Beitbridge snake). The seven dorsal scale rows are brown, sometimes with black scale edgings; a yellow or white dorso-lateral stripe is black-edged above and followed by a chestnut to brown band $2\frac{1}{2}$ scales wide; the lower half of the outer row of scales is white. Ventrals are yellow in the centre, with a pair of sharply defined black lateral lines; the ends of the ventrals are white. The black hair lines tend to fade out on the subcaudals.

Size. Largest (NM/M.465) 1155 (763+392) mm. from Beitbridge and (NM/M.861) 1155 (745+410) mm. from Bulawayo. Smallest (NM/M.286) 396 (268+128) mm. from Inyati.

Diet. Captive specimens took lizards (*Mabuya s. striata*; *Mabuya v. varia*; *Nucras intertexta holubi*) and frogs (*Rana* spp.).

Habits. A very fast moving snake. When disturbed on the granite outcrops, where it is abundant, it rapidly vanishes into the nearest jumble of loose rock. These snakes are extremely plentiful at Beitbridge, where they are fond of basking on the sand spruits which run down to the Limpopo. The large Beitbridge specimen was in such a situation when D. T. Crow and myself tried to cut her off from the nearest cover. However, she eluded us, shot up a bank and vanished. We eventually discovered her in a thorn tree and after much manoeuvring, succeeded in catching her. Another specimen, flushed in a sand

spruit at Tod's Hotel, West Nicholson, took refuge in a hole among the roots of a tree.

Habitat. Truly a "sand" snake, common throughout Matabeleland in the dry savanna and on granite outcrops. Often occurs side by side with *P. s. sibilans* in the same districts, but not together.

Distribution. Very common throughout Matabeleland. Apparently absent from Salisbury District and much of Mashonaland, although it occurs sparingly in the Northeast.

Localities: Victoria Falls; Zambezi-Sebungwe Junction; Lupane; Sawmills; Inyati; Shiloh; Bulawayo; Hope Fountain; Matopos; Empandene; Essexvale; Balla Balla; Filabusi; Irisvale; Stanmore; Lumane; Tod's Hotel; Beitbridge; Makumbi; Shawanoe River; Mtoko; Nyamaropa; Umtali; Odzi; Birchenough Bridge; Lundi River; Que Que; Mount Darwin; Sebungwe River.

PSAMMOPHIS JALLAE Peracca

Psammophis jallae Peracca, 1896, Boll. Mus. Zool. Torino, vol. 11, No. 225, p. 2, figs.: Kazungula to Bulawayo; Boulenger, 1910, p. 514; Hewitt, 1912, p. 275; FitzSimons, F. W., 1912, pp. 123, 125; Loveridge, 1940, p. 62 (generic revision).

Variation. (5 specimens.) Midbody scale rows 15; ventrals 159-175; anal divided; subcaudals 89-100; upper labials 7, the third and fourth entering the orbit; lower labials 9, the first four in contact with the anterior sublinguals; preocular 1; postoculars 2; temporals 2+2 (2+1 on one side of the Springvale snake). Tail length .31 to .33 of total.

Colouration. Grey-brown above, with ill-defined light dorso-lateral stripes. Whitish below.

Size. Largest (T.M.24392) 1135 (762+373) mm. from Wankie.

Distribution. Matabeleland, extending east to Driefontein and Salisbury.

Localities: Wankie; Kazungula to Bulawayo; Importuni District; Salisbury; Driefontein; Springvale.

PSAMMOPHIS CRUCIFER (Daudin)

Coluber crucifer Daudin, 1803, Hist. Nat. Rept., 7, p. 189.

Psammophis crucifer Boulenger, 1896, p. 169; Loveridge, 1940, p. 64 (generic revision); Rose, 1955, pp. 107, 108; FitzSimons, V. F., 1958, p. 210.

Variation. (5 specimens.) Midbody scale rows 15; ventrals 144-157 (118 in an aberrant Nyamaziwa snake); anal divided; subcaudals 61-73 (46 in the Nyamaziwa snake); upper labials 8, the fourth and fifth entering the orbit; lower labials 9, the first four in contact with the anterior sublinguals; preocular 1; postoculars 2; temporals 2+3. Tail length .20 to .23 of the total.



Fig. 4. Recorded localities for *Rhamphiophis*, *Dromophis* and *Psammophis*.
 * *Rhamphiophis oxyrhynchus rostratus* Peters
 ▼ *Dromophis lineatus* (Duméril and Bibron)
 ● *Psammophis sibilans sibilans* (Linné)
 ○ *Psammophis subtaeniatus subtaeniatus* Peters
 ■ *Psammophis jallae* Peracca
 □ *Psammophis crucifer* (Daudin)
 ▲ *Psammophis angolensis* (Boeage)

Colouration. Head grey, a dark red-brown, black-edged stripe extending from the snout, dividing on the frontal and again on the parietals, in each case enclosing a grey centre, continuing onto the body as a dorsal stripe; pre- and postoculars white;

upper labials, chin and throat white, blotched or speckled with black. A three-scale wide, black-edged dorsal stripe, red brown in colour, separated by a thin white line from a grey dorsolateral stripe two scales in width; a dark grey-brown lateral stripe, $2\frac{1}{2}$ scales wide, inferior half of outer scale row white. Below, pale orange with a broken black lateral line.

Size. Largest (NM/M.620) 375 (287+88) mm. from Odzani.

Habitat. The largest specimen was found run over on the Umtali-Inyanga road near Odzani. The steep rocky hillside on either side of the road was searched for more, but the only reptile found was a zonure (*Cordylus c. rhodesianus*).

Distribution. Eastern Districts of Southern Rhodesia. The only specimens from other parts of the colony are two from "Matabeleland" recorded by Boulenger (1896) and a single specimen taken by the Rev. K. Tasman, S.J. at Driefontein 20 years ago.

Localities: Nyamaziwa; Odzani; Odzi; Driefontein; "Matabeleland."

PSAMMOPHIS ANGOLENSIS (Bocage)

Amphiophis angolensis Bocage, 1872, Jour. Sci. Lisboa, vol. 4, p. 82.

Variation. (3 specimens.) Midbody scale rows 11; ventrals 140-162; anal divided; subcaudals 72; upper labials 8, the fourth and fifth entering the orbit; lower labials 7, the first four in contact with the anterior sublinguals; preocular 1; postoculars 2; temporals 1+2 (1+1 on one side of the Bulawayo snake). Tail length .29 to .30 of total.

Colouration. Head dark brown, three narrow yellow bands crossing the back of the head; upper labials white. Neck dark brown with a grey cross-band which broadens laterally; a broad, dark brown, dorsal band 4 scales wide; greyish to yellowish laterally; the Rusape snake has black hair lines through the outer two scale rows. Lower half of outer scale row and underside white or yellowish, uniform, or with an ill-defined lateral series of dark flecks.

Size. Largest (UM/R.16) 385 (270+115) mm. from Rusape.

Distribution. Apparently widely distributed, but scarce. The Balla Balla specimen in the British Museum (Natural History) seems to be the most southerly record.

Localities: Rusape; Bulawayo; Balla Balla.

CALAMELAPS UNICOLOR MIOLEPIS Günther

Plate 4, upper figure

Calamelaps miolepis Günther, 1888, Ann. Mag. Nat. Hist., ser. 6, vol. 1, p. 323.

Calamelaps concolor (not Smith) Chubb, 1909b, p. 36.

Calamelaps warreni Hewitt, 1912, p. 276; 1913, p. 480.

Calamelaps polylepis (not Bocage) Hewitt, 1913, p. 480.

Calamelaps unicolor (not Reinhardt) FitzSimons, V. F., 1939, p. 24.

Calamelaps unicolor polylepis Loveridge (part), 1944, p. 162 (generic revision).

Calamelaps unicolor warreni Loveridge (part), 1944, p. 163 (generic revision).

Calamelaps unicolor miolepis Witte and Laurent, 1947, p. 31 (generic revision).

Variation. (23 specimens.) Midbody scale rows 19 or 21; ventrals 168-214; anal divided; subcaudals 19-29; upper labials 6, the third and fourth entering the orbit, the third in contact with the prefrontal, the fifth largest and in contact with the parietal; lower labials 7 (8 in an Essexvale snake), the first four (five in the Essexvale snake) in contact with the anterior sublinguals; supraocular 1; postocular 1; temporal 0+1. Tail length .06 to .10 of the total.

Colouration. In life, iridescent purplish-black above and below, becoming opaque bluish-grey when about to slough. Difficult to distinguish from *Atractaspis* in the field.

Size. Largest ♂ (NM/M.411) 550 (495+55) mm. from Essexvale. Largest ♀ (B.M. ?) 1014 (952+62) mm. from Odzi.

Sexual dimorphism. Ten males all have 19 midbody scale rows; the range of ventrals is 168-185; range of subcaudals is 25-29, and the tail length is .10 of the total. Thirteen females all have 21 midbody scale rows; the range of ventrals is 195-214; range of subcaudals is 19-24 (but 6 tails are truncated) and the tail length is .06 to .07 of the total.

Discussion. Laurent has recently (1956) proposed the consolidation of the races *polylepis*, *miolepis* and *hildebrandti* under the older name *polylepis*. Although more material is needed before the question can be finally settled, I prefer to retain these races for the time being. From the material at present available it appears that *polylepis* of Angola always has 21 midbody scale

rows; *miolepis* of the Rhodesias, Nyasaland, S.W. Tanganyika, Mozambique, Transvaal and Zululand has 19 (usually males) or 21 (usually females) scale rows, and *hildebrandti* of Kenya and Tanganyika has 17 or 19 scale rows.

Diet. The huge Odzi ♀ contained a Blind-Snake (*Typhlops s. mucruso*) approximately two feet in length. A captive Bulawayo ♂ readily takes Blind-Snakes (*Typhlops s. mucruso*) and Worm-Snakes (*Leptotyphlops scutifrons*), also lizards (*Mabuya v. varia*; *Nucras intertexta holubi*).

Enemies. A 3-foot ♀ was killed by a cat at Umtali.

Distribution. Widely distributed throughout Southern Rhodesia, but rarely encountered because of its fossorial habits.

Localities: Nyamaropa; Imbeza; Umtali; Odzi; Salisbury; Gatooma; Driefontein; Bulawayo; Matopos; Empandene; Essexvale; Gwanda; Birchenough Bridge; Zimbabwe.

CALAMELAPS VENTRIMACULATUS WEBSTERI FitzSimons and Brain

Calamelaps ventrimaculatus websteri FitzSimons, V. F. and Brain, 1958, Occ. Papers. Rhod. Mus., 22B, p. 202.

Variation. (3 specimens.) Midbody scale rows 15; ventrals 187-191; anal divided; subcaudals 23-25; upper labials 5, the second and third entering the orbit, the second in contact with the prefrontal, the fourth largest and in contact with the parietal, the third separated from the parietal by a postocular, by which the fourth is in short contact; lower labials 5, the third very large and just making contact with its fellow behind the sublinguals; supraocular 1; postocular 1; temporal 0+1. Tail length .08 of the total.

Colouration. Head black with white sutures. A dorsal band, 7 scales wide, is black with each scale white edged, giving a reticulated appearance. Upper labials, lateral scale rows and underside are white.

Largest. (NM/M.671, Holotype) 145 (132+13) mm. from Sawmills.

Habitat. This type series was found by Mr. R. E. Webster in the sand at the bases of tree stumps.

Distribution. Known only from the type locality, Sawmills, in the Kalahari sands 55 miles northwest of Bulawayo.

XENOCALAMUS BICOLOR BICOLOR Günther

Xenocalamus bicolor Günther, 1868, Ann. Mag. Nat. Hist., ser. 4, vol. 1, p. 415, pl. xix, fig. A: Zambezi; Boulenger, 1896, p. 248.

Xenocalamus bicolor bicolor FitzSimons, V. F., 1946, p. 39; Witte and Laurent, 1947, p. 45.

Data of type. Midbody scale rows 17; ventrals 218; anal divided; subcaudals 24; upper labials 6, the third and fourth entering the orbit, the fifth very large and in contact with the parietal; lower labials 6, the first three in contact with the anterior chin shields, the third very large; rostral and frontal very large, the latter in broad contact with the internasals; prefrontals very small and widely separated by the frontal, so that they resemble preoculars; supraocular 1; postocular 1; temporal 0+1. Tail length .07 of the total.

Colouration. Black above: upper labials, outer two scale rows and underside white.

Size. Type measures 430 (400+30) mm. from the Zambezi.

Distribution. This rare fossorial species was first described by Günther from a specimen collected on the Zambezi by Chapman. Dr. V. F. FitzSimons has recorded specimens from Northern Transvaal, so this remarkable snake should be found along the dry western border of Southern Rhodesia. Several subspecies have been described from Bechuanaland and South West Africa.

Localities: Zambezi.

CHILORHINOPHIS GERARDI GERARDI (Boulenger)

Apostolepis gerardi Boulenger, 1913, Rev. Zool. Afr., vol. 3, p. 103, fig.

Parkerophis gerardi Parker, 1927, p. 82, fig. 1.

Chilorhinophis gerardi Pitman, 1938, p. 183; Witte and Laurent, 1947, p. 55.

Chilorhinophis gerardi gerardi Loveridge, 1951, p. 194.

Variation. (4 specimens.) Midbody scale rows 15; ventrals 274-288; anal divided; subcaudals 20-31; upper labials 4, the third entering the orbit; lower labials 5, the first three in contact with the anterior sublinguals; preocular 1; postocular 1; temporal 0+1. Tail length .08 of total.

Colouration. Top of head and neck black, extending laterally on the neck to form a half collar as in *Aparallactus capensis*: a pair of yellow spots on the sutures of supraoculars and parietals, sometimes another pair of light spots behind the parietals; black

stripes extending through the eye to the mouth and from the parietal to the angle of the jaw; rest of upper labials and chin yellow. Body yellow, with a black vertebral stripe 2 scales wide, followed by an interspace 2 scales wide, then a black lateral stripe 1 scale in width. Below, bright orange. Posterior third of the blunt tail is black, blotched with white, to simulate the head.

Size. Largest (NM/M.246) 423 (390+33) mm. from Karoi.

Distribution. Restricted to the northern parts of Southern Rhodesia, i.e. the Zambezi and its tributaries.

Localities: Karoi; Sinoia; Lukosi; Gatooma.

APARALLACTUS LUNULATUS LUNULATUS (Peters)

Uriechis lunulatus Peters, 1854, Monatsb. Akad. Wiss. Berlin, p. 323.

Variation. (9 specimens.) Midbody scale rows 15, ventrals 148-173; anal entire; subcaudals 55-62; upper labials 6, the third and fourth entering the orbit; lower labials 6, the first pair making good contact behind the mental, the first four in contact with the anterior sublinguals; preocular 1; postocular 1; temporals 1+1 (1+2 on one side of a Fatima snake). Tail length .19 to .23 of the total.

Colouration. Juveniles: (a) Odzi. Grey-brown above with light-edged scales; a black "collar" followed by 12 black cross bands; (b) Balla Balla. Uniform plumbeus above, dark grey below. Adults: Head pale brown. Body light grey with the base of each dorsal scale black, giving a reticulated effect; a black half "collar" on neck, followed by up to 12 black spots (these markings are often very faint). Below, uniform white.

Size. Largest (NM/M.925) 428 (345+83) mm. from Essexvale. Smallest (NM/M.452) 161 (125+35) mm. from Balla Balla.

Diet. The largest Essexvale snake took two centipedes while in captivity. I was fortunate enough to witness one of these being overcome. The snake seized the three-inch centipede in the middle of its body and chewed towards the head. Meanwhile the centipede tried to drive its fangs into the snake's neck, but was foiled by the smooth scales. Drops of venom were visible on the snake's neck. The venom of the Centipede-eater soon took effect

and the myriapod ceased to struggle and was rapidly swallowed head first.

Habitat. Specimens taken under slabs of granite at Balla Balla and Irisvale.

Distribution. Possibly absent from the higher altitudes, but widely distributed throughout Southern Rhodesia.

Localities: Victoria Falls; West Sebungwe; Fatima; Odzi; 9 miles south of Bulawayo; Essexvale; Balla Balla; Irisvale; Nyamaropa.

APARALLACTUS GUENTHERI Boulenger

Aparallactus Guentheri Boulenger (part), 1895, Ann. Mag. Nat. Hist., ser. 6, vol. 16, p. 172; 1902, p. 18; 1910, p. 516; FitzSimons, F. W., 1912, p. 128; Loveridge, 1953, p. 284; Rose, 1955, p. 119.

Variation. (4 specimens.) Midbody scale rows 15; ventrals 153-163; anal entire; subcaudals 55-59; upper labials 6, the third and fourth entering the orbit; fifth largest and in contact with the parietal; lower labials 5, the first pair not in contact behind the mental, the first three in contact with the anterior sublinguals; preocular 1; postocular 1; temporals 0+1+1. Tail length .21 to .23 of the total.

Colouration. Head dark grey, a narrow sulphur-yellow band crossing rear of parietals, broadening laterally to cover the sixth labial; this is followed by a black interspace 7 scales wide, then another sulphur-yellow band 2 scales wide, expanding on the sides. Chin and throat white or greyish. Rest of body, above and below, iridescent steel-blue. In life, an extremely handsome little snake.

Size. Largest (NM/M.676) 357 (275+82) mm. from Umtali.

Distribution. Apparently replaces *Aparallactus l. lunulatus* at the higher altitudes in Mashonaland and the Eastern Districts.

Localities: Mazoe; Umtali.

APARALLACTUS CAPENSIS CAPENSIS A. Smith

Aparallactus capensis A. Smith, 1849, Ill. Zool. S. Africa, Rept., App., p. 16; Boulenger, 1902, p. 18; 1910, p. 516; Gough, 1908, p. 33; FitzSimons, F. W., 1912, p. 128; FitzSimons, V. F., 1935, p. 323; 1939, p. 24; Tasman, 1953, p. 33; Rose, 1955, p. 119.

Aparallactus capensis capensis Loveridge (part), 1944, p. 205 (generic revision); Witte and Laurent, 1947, p. 122 (generic revision); Fitz-Simons, V. F., 1958, p. 210.

Variation. (32 specimens.) Midbody scale rows 15; ventrals 137-170; anal entire; subcaudals 30-51; upper labials 6, the third and fourth entering the orbit, the fifth largest and in contact with the parietal; lower labials 5-6, the first three in contact with the anterior sublinguals, the first pair not in contact behind the

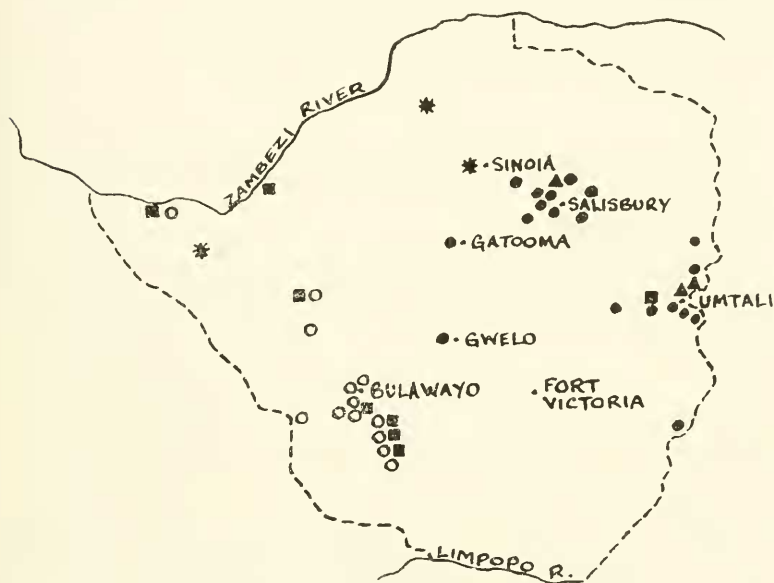


Fig. 5. Recorded localities for *Chilorhinophis* and *Aparallactus*.

- * *Chilorhinophis gerardi gerardi* (Boulenger)
- *Aparallactus lunulatus lunulatus* (Peters)
- ▲ *Aparallactus guentheri* Boulenger
- *Aparallactus capensis capensis* A. Smith
- *Aparallactus capensis capensis* × *bocagei*

mental; preocular 1, in contact with the nasal; postocular 1; temporals 0+1+1. Tail length .13 to .20 of total.

Colouration. Top of head and neck black, descending on the sides of the neck to form a half "collar"; sometimes a pair of

light elongate spots extending back from the ends of the parietals; sides of head black from snout to anterior edge of the fifth labial. Body light grey-brown to bright red-brown, uniform, or with a narrow darker vertebral line, or with five evenly spaced narrow dark lines. Below, uniform white.

Size. Largest (NM/M.1190) 331 (268+63) mm. from Odzi.

Diet. A three-inch centipede recovered from the stomach of a Gatooma snake.

Enemies. The tail of a Cape Centipede-eater was disgorged by a Burrowing Adder (*Atractaspis bibronii* intermediate) taken at the Mchिंगwe River, Belingwe.

Habits. Taken under stones in many different types of country.

Distribution. Common throughout Mashonaland and the Eastern Districts. I regard Matabeleland specimens as intermediates between the typical form and the race *bocagei* described from Angola (*vide infra*).

Localities: Mazoe; Trelawney; Mount Hampden; Salisbury; Hunyani; Domboshawa; Chishawasha; Kondo; Odzi; Umtali; Imbeza; Nyamaziwa; Vuniba Mtn.; Gatooma; Gwelo; Mount Silinda.

APARALLACTUS CAPENSIS CAPENSIS × BOCAGEI

Aparallactus capensis Chubb, 1909a, p. 596; 1909b, p. 36.

Aparallactus capensis capensis Loveridge (part), 1944, p. 205 (generic revision).

Variation. (17 specimens.) Midbody scale rows 15; ventrals 156-181; anal entire; subcaudals 44-63. Lepidosis otherwise as in the typical form. Tail length .17 to .22 of total.

Colouration. As in the typical form except that no specimens have the bright red-brown colouring found in some Mount Hampden snakes. Most specimens have the pair of light spots behind the parietals.

Size. Largest (NM/M.495) 348 (285+63) mm. from Tuli Hill.

Diet. Captive specimens took small centipedes.

Distribution. Matabeleland.

Localities: Victoria Falls; Fatima; Gwaii; Bulawayo; Matopos Dam; Bambata Cave, Matopos; Tuli Hill; Plumtree; Essexvale; Balla Balla; Irisvale; Lumane; Syringa.

Discussion. Analysis of the data for 49 specimens of *Aparalactus capensis* from Southern Rhodesia shows a definite increase in ventral and subcaudal counts from east to west. The lowest ventral counts are 137 and 138 for two Vumba Mountain snakes. At the other extreme are two snakes from the Matopos with 178 ventrals. The Matabeleland snakes, while not approaching the high ventral count of *bocagei* (175-191), do not fall within the accepted range of the typical form, and are best regarded as intermediates. The average counts for the material examined are: *A. c. capensis* . . . ventrals 157, subcaudals 43. *A. e. capensis* × *bocagei* . . . ventrals 167, subcaudals 50.

DASYPELTINAE

DASYPELTIS SCABRA (Linné)

Coluber scaber Linné, 1758, Syst. Nat., ed. 10, 1, p. 223.

Dasyveltis scabra Boulenger, 1894, p. 354; 1902, p. 17; 1910, p. 509; Chubb, 1909a, p. 595; 1909b, p. 35; FitzSimons, F. W., 1912, pp. 90-91; Tasman, 1953, p. 35; Rose, 1955, pp. 98-104; Isemonger, 1955, p. 72.

Variation. (27 specimens.) Midbody scale rows 21-27; ventrals 192-248; anal entire; subcaudals 45-70; upper labials 7, rarely 6, the third and fourth entering the orbit; no loreal; preocular 1 (2 on both sides of a Zambezi snake and one side of a Bulawayo snake); postoculars 2; temporals 2+3; 2+4 or 3+4. Tail length .11 to .17 of the total.

Colouration. Two phases occur. The commonest is the rhombic phase: Light brown or greyish above with a dorsal row of dark elongated blotches and a lateral series of dark vertical bars. A broad V-shaped mark on the neck is usually preceded by a narrower V on the head (sometimes two). A Fatima snake has a double row of coalescing dorsal blotches. Some specimens from Mashonaland and the Eastern Districts are uniform red-brown; this phase seems to predominate around Salisbury. Ventrums white, usually with some brown flecking at the ends of the ventrals.

Size. Largest (UM/R.6) 724 (630+94) mm. from Umtali.

Diet. Captive specimens would take only birds' eggs. Hatchlings consistently refused fresh gecko eggs, which seem quite suitable fare.

Distribution. Found throughout Southern Rhodesia, but scarce.

Localities: Zambezi River, 40 miles east of Chirundu; Mazoe; Salisbury; Chishawasha; Musami; Odzani Falls; Imbeza; Odzi; Untali; Tandaai; Fatima; 25 miles north of Bulawayo; Bulawayo; Springvale; 9 miles south of Bulawayo; Mount Silinda; Mount Darwin; Bembesi.

ELAPIDAE

ASPIDELAPS SCUTATUS SCUTATUS (A. Smith)

Plate 4, lower figure

Cyrtophis scutatus A. Smith, 1849, Ill. Zool. S. Africa, Rept., App. p. 22.

Aspidelaps scutatus Chubb, 1909a, p. 597; Boulenger, 1910, p. 519; Fitz-Simons, F. W., 1912, pp. 165-166; Tasman, 1953, p. 24; Isemonger, 1955, p. 85.

Aspidelaps scutata Chubb, 1909b, p. 35.

Variation. (9 specimens.) Midbody scale rows 21; ventrals 113-123; anal entire; subcaudals 23-31; upper labials 6, the fourth entering the orbit; lower labials 7, the first three or four in contact with the anterior sublinguals; preocular 1; postoculars 2-3; temporals 2+4, 2+5 or 2+6, the lower anterior temporal very large, lying between the fifth and sixth labials (in a Kezi snake this shield reaches the lip, excluding the fourth labial). Tail length .14 to .17 of the total.

Colouration. Head black, chin and throat white, with black intrusions at the angle of the jaw; a broad black band, approximately 12 ventrals wide, encircling the neck. Body bright orange flecked with brown, a dorsal series of brown blotches. Ventrals white.

Size. Largest ♂ (NM/M.250) 545 (455+90) mm. from Kezi. Largest ♀ (NM/M.1478) 547 (490+57) mm. from Zezani.

Diet. The big Zezani ♀ took frogs (*Rana d. delalandii*; *Rana o. oxyrhynchus*) in captivity.

Habitat. The enormous rostral, in broad contact with the prefrontals, immediately distinguishes this fossorial species; it favours sandy localities.

Distribution. Matabeleland.

Localities: Lupane; Bulawayo; Kezi; Sun Yat Sen Mine; Empandene; Zezani; Beitbridge.

ELAPSOIDEA SUNDEVALLII DECOSTERI Boulenger

Elapsoidea Decosteri Boulenger, 1888, Ann. Mag. Nat. Hist., ser. 6, vol. 2, p. 141; Rose, 1955, p. 150; Isemonger, 1955, p. 86.

Elapochis guentheri (not Bocage) Chubb, 1909a, p. 596; 1909b, p. 35; Boulenger, 1910, p. 519; FitzSimons, F. W., 1912, pp. 166-167; Hewitt and Power, 1913, p. 165.

Elapsoidea (Elapochis) guentheri Tasman, 1953, p. 24.

Elapsoidea guentherii Rose, 1955, p. 150; Isemonger, 1955, p. 86.

Elapsoidea sundevallii decosteri Loveridge, 1944, p. 217 (generic revision).

Variation. (30 specimens.) Midbody scale rows 13; ventrals 137-162; anal entire; subcaudals 14-29; upper labials 7, the third and fourth entering the orbit; the first three or four lower labials in contact with the anterior sublinguals; preocular 1, in contact with the nasal; postoculars 2; temporals 1+2; Tail length .07 to .10 of the total.

Colouration. Juveniles: Head white or greyish, with a black goblet-shaped marking extending along the parietal suture onto the frontal. Body black, with 11 to 14 white cross-bars approximately one third the width of the black interspaces, a further 1 to 3 cross-bars on the tail. Below, chin white, rest of underside dark grey. While the snake is between 200 and 350 mm. in length, the white cross-bars fade out, through a gradual darkening of each scale from the centre. Adults are uniform black above, black or greyish below.

Size. Largest (SM/R.47) 593 (540+53) mm. from Salisbury District. Smallest (NM/M.1178) 178 (160+18) mm. from Bulawayo.

Distribution. Widely distributed throughout Southern Rhodesia, but scarce in Mashonaland and the Eastern Districts.

Localities: Miami; Eldorado; Salisbury District: Kutama; Gatooma; Untali District: Deka; Wankie; Selukwe; Bulawayo; Matopos; Irisvale; Mavuradona Mts.

NAJA HAJE HAJE (Linné)

Plate 5

Coluber haje Linné, 1758, Syst. Nat., ed. 10, p. 255.

Naja haje Boulenger, 1902, p. 18; 1910, p. 517; Gough, 1908, p. 35; Chubb, 1909a, p. 596; 1909b, p. 36; FitzSimons, F. W., 1912, pp. 163-164; Hewitt and Power, 1913, p. 164; Tasman, 1953, p. 21; Isemonger, 1955, p. 83.

Naja haic var. *annulifera* Chubb, 1909a, p. 597; 1909b, p. 36; Hewitt and Power, 1913, p. 164.

Naja haic Rose, 1955, p. 132.

Native names of Egyptian Cobra. *Pimpi* (Sindebele), but properly applied to *Naja n. mossambica*, sometimes confused with *Dendroaspis p. polylepis* and called *Imamba*; *Makure* or *Mungu* (for the black phase) (Cheshona). The Banded Cobra (var. *annulifera* of Peters) is known as *Lume* in Sindebele and *Nyamafingu* in Cheshona.

Variation. (79 specimens.) Midbody scale rows 19 (17 in three cobras from Chishawasha, Bulawayo and Essexvale; 18 in one Essexvale snake); ventrals 186-203; anal entire; subcaudals 53-66; upper labials 7, the sixth largest (rarely 6, the fifth largest), normally excluded from the orbit by the suboculars (entering the orbit in three Bulawayo snakes: (a) third labial on each side; (b) second on one side and third on the other; (c) third on one side and third and fourth on the other); preocular 1; suboculars 2-3; postoculars 2, rarely 3; temporals 1+2 or 1+3. Tail length .14 to .18 of the total.

Colouration. Juveniles: Head brown, body dull yellow with a broad black band encircling the neck, ventrum bright yellow. Hatchlings belonging to the variety *annulifera* have barely discernible light and dark yellow bands. The first yellow band is clearly visible against the black on the back of the hood.

Adults: Head dark brown to black, body grey-brown (most Mashonaland snakes) to ashy black (most Matabeleland snakes). Below, yellow more or less mottled with brown, a broad (ca. 10 ventrals wide) purplish-brown band on the throat. In many Matabeleland cobras the belly gradually darkens from the tail towards the head, adults often becoming uniform black above and below with only the chin left yellow. Occasional specimens retain the lighter colouring of the juvenile and become an attractive orange-brown, with pink interstitial skin.

In the variety *annulifera* Peters the yellow livery of the juvenile is partially retained, while the rest of the body becomes even darker than usual. The normal colouring is: Head dark brown, body blue-black with from 7 to 11 bright yellow or creamy white cross bands, which are normally about half the width of the black interspaces. The belly is bright yellow, uniform, or more often blotched with black where the cross bands would continue.

In some specimens the body is completely ringed in black and yellow. The first band, in the centre of the "hood," is very narrow and is often broadened in the centre with a black median spot, reminiscent of the hood marking of the "monocellate" variety of *Naja naja*. One Umtali snake had a series of yellow dorsal blotches instead of bands. Another Umtali snake had a single yellow band just before the vent, the rest of the body being uniform black.

Size. Largest ♂ (NM/M.1373) 2285 (1905+380) mm. from Nyamandhlovu. Largest ♀ (NM/M.393) 2238 (1900+338) mm. from 7 miles north of Bulawayo. Smallest (T.M.) 302 (250+52) mm. from Amandas. This species appears to reach a length in excess of 10 feet.

Discussion. *Naja haje* var. *annulifera* Peters is represented by 26 of the 79 specimens for which data is available. The only difference in scale counts is a slightly higher average for subcaudals in *annulifera*. All the specimens of *annulifera* that I have sexed have been males, but some typical *haje* are also males, so there is no clear-cut sexual distinction. Unlike most species, the males seem to grow at least as large as the females. The record Nyamandhlovu specimen is an *annulifera*, as are two other big males of 2118 and 1943 mm. This handsome variety has not been recorded north of the Zambezi, but is known from Mozambique (Tete, type locality), Transvaal and Bechuanaland.

Diet. The largest ♀ contained a ♀ *Bitis a. arietans* 2'5" in length, which in turn contained 19 fully formed young. A 6½-foot *annulifera* from Redbank had also swallowed an adult puffadder. A 5-foot cobra, captured on the Umzingwane River at Essexvale, disgorged five toads (*Bufo regularis*). Stomachs examined usually contained toads or amphibian remains. Cobras are persistent raiders of poultry runs. A 6-foot cobra killed at Irisvale contained two well-grown chickens. The Rev. K. Tasman, S.J. records (*in litt.*) a cobra of 7'1" (killed in a poultry run) which contained 12 eggs. Another snake contained five ducklings. Tasman reports that 7 out of 17 stomachs with recognisable prey contained warm-blooded animals (rats and ducklings). Captive specimens took toads (*Bufo regularis*; *Bufo carens*); frogs (*Rana* spp.); chamaeleons (*Chamaeleo d. dilepis*)

and snakes (*Boaedon f. fuliginosus*; *Psammodphis s. sibilans*; *Naja n. mossambica*; *Causus deflippii*); one took a rat.

Parasites. Many specimens harbour ticks (*Aponomma latum*). The largest male was full of nematodes.

Enemies. While collecting along the N'sese River on the edge of the Matopos, I disturbed a fine Martial Eagle (*Polemaetus bellicosus*), which rose with a dead six-foot cobra in its talons.

Defence. Normally a cobra tries to escape when disturbed, but if taken by surprise or cornered, it rears and spreads a broad "hood," but does not strike unless molested. If left alone, it soon drops to the ground and tries to escape. Occasional specimens will attack if provoked; twice, cobras have turned and come straight at me when I attempted to catch them; both were *annulifera*. Some specimens sham death after capture. The first cobra I ever captured was a 4'9" *Naja h. haje* which "played possum" very convincingly. I measured the "corpse," took all the scale counts, removed numerous ticks, examined the fangs and washed some sand out of the mouth. The cobra seemed quite lifeless, which puzzled me as I had not been rough while catching it. While I was getting out my skinning knives, the "corpse" came to life and started to glide across the floor!

Venom. The glands of an adult cobra contain a large quantity of the powerful neurotoxic venom. The only bite received personally was from a two-foot juvenile, which quietly started to chew my finger while I was handling it. I ligatured the finger at the base, cut and sucked the punctures and had no symptoms of poisoning whatsoever.

Habits. Cobras do most of their hunting at night, but may often be found basking near their holes during the day, particularly in the early morning. The usual lair is a disused termitarium, but rat holes and mole runs are sometimes used. I have no records of this species taking to the water or climbing trees.

Habitat. This species does not share the Spitting Cobra's preference for waterside localities, but I found it abundant near Mount Hampden in an extensive vlei which is inundated during the rains. The cobras lived in the numerous large termitaria, the only dry spots.

Distribution. Common throughout Southern Rhodesia.

Localities: Trelawney; Horseshoe Block; Mazoe; Amandas;

Mount Hampden; Salisbury; Chishawasha; Marandellas; Monte Cassino; Odzi; Umtali; Vumba Mountain; Zambezi-Sebungwe Junction; Gwelo; Nyamandhlovu; Redbank; Bulawayo; Matopos; Plumtree; Springvale; Essexvale; N'cema Dam; Balla Balla; Irisvale; Stanmore; Tod's Hotel, West Nicholson; Umshagashe River; Bubyee River; Umvuma; Cyrene; Figtree.

NAJA HAJE ANCHIETAE Bocage

Naja anchietae Bocage, 1880, Jour. Sci. Lisboa, vol. vii, pp. 89, 98.

Discussion. This race is distinguished from the typical form by having only 17 midbody scale rows. Two cobras from Chishawasha and Bulawayo have 17 scale rows, as does an *annulifera* from Essexvale, but as they occur in the midst of a population of typical *haje* with 19 rows I regard them as aberrant specimens.

As *Naja haje anchietae* has been recorded from Livingstone in Northern Rhodesia and Kabulabula in N.E. Bechuanaland, both on the Southern Rhodesian border, this race probably occurs in the northwest corner of the colony.

NAJA NIGRICOLLIS MOSSAMBICA Peters

Plate 6, upper figure

Naja mossambica Peters, 1854, Monatsb. Akad. Wiss. Berlin, p. 625.

Naja nigricollis (not Reinhardt) Boulenger, 1902, p. 18; 1910, p. 518; Chubb, 1909a, p. 597; 1909b, p. 36; FitzSimons, F. W., 1912, pp. 164, 165; Hewitt and Power, 1913, p. 65; Tasman, 1953, p. 22.

Naja nigricollis (not Reinhardt) Rose, 1955, pp. 128-132; Isemonger, 1955, p. 84.

Native Name of the Mozambique Spitting Cobra. *Pimpi* (Sindebele), correctly applied to this species, but often applied to other brown, grey or blackish snakes.

Variation. (79 specimens.) Midbody scale rows 21-25 (68 snakes have 23); ventrals 182-203; anal entire; subcaudals 54-70; upper labials 6-7, the third, rarely the fourth, entering the orbit; preoculars 2; postoculars 3; temporals 2+4, 2+5, 3+4, 3+5, 3+6 or 3+7. Tail length .15 to .19 of the total.

Colouration. Above, head light brown, body light grey to grey-brown, scales black tipped. Below, salmon-pink to yellowish, with an irregular series of black cross-bands and blotches on the throat.

Size. Largest (NM/M.973) 1543 (1285+258) mm. from Essexvale. Smallest (NM/M.765) 292 (240+52) mm. from Chirinda Forest. This is a smaller species than *Naja h. haje*, averaging less than 4 feet in length.

Discussion. The species of the genus *Naja* are sorely in need of revision, none more so than *Naja nigricollis*. Two well-defined races occur in Rhodesia. *Naja nigricollis crawshayi* Günther ranges through Northern Rhodesia as far south as Lusaka and Fort Jameson. *Naja nigricollis mossambica* Peters occurs in the south of Northern Rhodesia, Nyasaland and S.W. Tanganyika, ranging south through Southern Rhodesia and Mozambique into the Union of South Africa. These races may be separated as follows:

Midbody scale rows 17-21 (usually 19); above, dark brown to black; below, yellowish to grey, with a *single* broad black band on the throat . . . *Naja nigricollis crawshayi* Günther.

Midbody scale rows 21-25 (usually 23); above, light grey or brown with black-tipped scales; below, pinkish or yellowish white, with a *series* of black bands and blotches on the throat . . . *Naja nigricollis mossambica* Peters.

Diet. A cobra captured beside the N'sese River at Irisvale disgorged the posterior half of South-eastern Green Snake (*Philothamnus hoplogaster*). An Imbeza snake disgorged a Slug-eater (*Duberria l. rhodesiana*). Numerous stomachs examined contained amphibians. This species also raids poultry runs, a 4-foot Irisvale cobra contained four small chickens. Captive specimens took toads (*Bufo regularis*; *Bufo carvens*); frogs (*Rana* spp.); dead snakes. This species is truly cannibalistic, for a 4-foot cobra swallowed a 12" juvenile when it was placed in the same cage.

Parasites. Most specimens carry a few ticks, but an aestivating cobra, killed when a culvert was demolished near Bulawayo, yielded 21 adults and 35 larvae of *Aponomma latum*; many more escaped.

Defence. Although it invariably tries to escape from man if possible, this cobra needs little provocation to make it start "spitting." The snake rears and spreads a long narrow "hood," very different from that of *Naja h. haje*. Occasionally a cobra will rear higher and higher until it is supported by little more

than its tail. In these circumstances the snake will repeatedly overbalance, but a cobra with no more than a third of its length on the ground can balance itself beautifully, recoiling from a strike like a piece of sprung steel. When "spitting," the cobra draws the head back, opens the mouth, then, as the venom is forced down the fangs and through the bend at the tip, the head is thrown forward and a blast of air from the glottis assists the twin jets of venom to reach the target. The cobra aims for the eyes and is very accurate. A four-foot cobra has a range of from six to eight feet; although drops of venom travel farther than this, the range is too great for them to reach eye level. A cobra can continue to spit almost indefinitely; I have never managed to exhaust the supply of venom except by persuading the snake to discharge its venom repeatedly for several days. Even then the supply of venom is replenished in a day or two. This species seems to rely primarily on blinding an aggressor with venom and rarely tries to bite in the normal way.

Habits. This cobra is very plentiful along streams in Matabeleland. It often takes to the water when disturbed, swimming strongly on the surface with head down. Although often found living in termitaria, this is the only snake that I regularly find in rock crevices. Whenever a stream flows past fissured rocks, there will be found *Naja n. mossambica*, or at least the tell-tale sloughs. A well-populated fissure, in a granite outcrop at Irisvale, contained two four-foot Spitting Cobras, a dozen geckos (*Pachydactylus bibronii*), a few other lizards and a big scorpion (*Opisththalmus*)! This species sometimes climbs trees. One evening, while in camp at Beitbridge, I found a Spitting Cobra climbing the tree that I was reclining against! I have also taken a juvenile on a branch ten feet from the ground at Irisvale.

Distribution. Abundant in south Matabeleland, where it is probably the commonest snake. The species is less common elsewhere in the colony and is extremely scarce around Salisbury.

Localities: Sinoia; Eldorado; Trelawney; Mazoe; Bindura; Salisbury District; Penhalonga; Imbeza; Odzi; Umtali; Hunter's Road; Wankie; Deka; Ntabezinduna; Nyamandhlovu; Bulawayo; Syringa; Empandene; Essexvale; Balla Balla; Filabusi; Irisvale; Sinkukwe; Glass Block; Mazeppa Mine, Gwanda; Beitbridge; Umzilizwe River; Chirinda Forest; Mount Darwin; Umvuma.

NAJA MELANOLEUCA Hallowell

Plate 6, lower figure

Naja haje var. *melanoleuca* Hallowell, 1857, Proc. Acad. Nat. Sci. Philadelphia, p. 61.

Data of unique specimen. Midbody scale rows 19; ventrals 215; subcaudals 67; upper labials 7, the third and fourth entering the orbit, the sixth largest and in contact with the postoculars; preocular 1; postoculars 3; temporals 1+2 or 1+3. Tail length .17 of the total.

Colouration. Light grey-brown above, freely speckled with black, tail dark brown. Belly bright yellow, heavily spotted with black, no bands on the throat. Upper labials yellowish, with only faint traces of the black sutures characteristic of the species.

Size. 1690 (1410+280) mm. from Mount Silinda.

Diet. The only food taken while in captivity consisted of two dead rats and two Blind-snakes (*Typhlops s. mucruso*).

Parasites. Numerous ticks found on this cobra were identified as *Aponomma latum* by Dr. G. Theiler.

Defence. This is a much faster species than the other local cobras. When cornered it rears and spreads a long narrow hood, similar to that of *Naja n. mossambica*. It is a formidable reptile to capture.

Temperament. In captivity, this specimen is much quieter and less nervous than the other cobras; it never spreads a hood or strikes at the glass when I pass the cage, as specimens of *Naja h. haje* invariably do.

Habitat. This specimen was taken as it emerged from a hole a yard from the edge of a strip of forest, where it borders mealy lands on the summit of Mount Silinda. On an earlier expedition I disturbed a huge cobra about eight feet in length, which was basking on a mat of floating grasses on the Umzilizwe River, below Mount Silinda. The cobra slid to the edge of the vegetation and dived to the bottom of a deep pool.

Distribution. Liable to be found in suitable localities anywhere along the Eastern Border of Southern Rhodesia.

Localities: Umzilizwe River; Mount Silinda.

DENDROASPIS ANGUSTICEPS (A. Smith)

Naia angusticeps A. Smith (part), 1849, ill. Zool. S. Africa, Rept., pl. lxx.

Dendroaspis angusticeps Loveridge, 1950, p. 251.

Data for unique specimen. Midbody scale rows 17 (usually 19); ventrals 21+; anal divided; subcaudals 120; upper labials 8-9, the fourth entering the orbit. Tail length .25 of the total.

Size. ♂ (M.C.Z. 29182) 1702 (1275+427) mm. from Mount Silinda.

Distribution. The Green Mamba may be found in any of the forested areas of the Eastern Districts.

Localities: Mount Silinda.

DENDROASPIS POLYLEPIS POLYLEPIS (Günther)

Dendroaspis polylepis Günther, 1864, Proc. Zool. Soc. London, p. 310.

Dendroaspis angusticeps Boulenger (part) 1910, p. 520; FitzSimons, F. W. (part), 1912, pp. 169, 170.

Dendroaspis angusticeps Tasman, 1953, p. 20.

Dendroaspis polylepis Rose, 1955, pp. 143-147; Isemonger, 1955, p. 81.

Native Name of the "Black" Mamba. *Imamba* (Sindebele); *N'zayo* (Cheshona).

Variation. (24 specimens.) Midbody scale rows 21-25; ventrals 256-275; anal divided; subcaudals 115-131; upper labials 8-9, the fourth¹ entering the orbit; preoculars 3; postoculars 3-4 (1, through fusion, on one side of a Selukwe snake); temporals 2+3 (usual), 2+4 or 3+3. Fusion of head shields common, particularly the sixth labial and lower anterior temporal. Tail length .20 to .22 of total.

Colouration. Above, very dark olive-green when freshly sloughed, rapidly becoming dark brown, grey-brown or olive, sometimes mottled with blackish-brown towards the tail. Below, dirty white or greenish white, often with dark mottlings posteriorly.

Size. Largest (NM/M.372) 2875 (2280+595) mm. from 20 miles north of Bulawayo. Detailed measurements are available for only 10 specimens, the rest consisting of skins and heads. The species reaches a length of 14 feet.

Parasites. Ticks from an Odzi specimen were identified as

¹ Fifth on one side of a Bubyee River snake.

Aponomma latum by Dr. G. Theiler. Most mambas have a few of these ticks on the neck.

Defence. Normally the mamba receives ample warning of the approach of man and quietly glides into cover. If taken by surprise or cornered, the mamba usually attempts to intimidate the enemy. This was well demonstrated by a huge mamba I found in a gravel pit near Balla Balla. The snake was at least 12 feet in length and was basking between a large termitarium and a track. I cut off the mamba from its anthill and pushed a noose in front of it as it made for home. As it reached the noose, the mamba reared up to the level of my face, spread a broad "hood" and opened its mouth, displaying the black interior and formidable fangs. With that terrible head only 18" from my nose, I lost much of my enthusiasm and recoiled. Thereupon the mamba dropped to the ground and streaked down a hole in the termitarium¹.

Habitat. Mambas are often found on granite kopjes, where they live in rock crevices. In open thorn-bush they usually occupy disused termitaria.

Distribution. Throughout Southern Rhodesia, excluding the highlands over 5,000 feet. Most plentiful in the low-lying river valleys.

Localities: Inyazura; Odzi; Grand Reef; Umtali; Hot Springs; Umvumvumu River; Hartley; Que Que; Wankie; West Sebungwe; Fatima to Bulawayo; Turk Mine; Heany; Selukwe; Inyati; Nyamandhlovu; Plumtree; Matopos; Balla Balla; Beit-bridge; Shabani; Devuli River; Buby River; Umvuma.

VIPERIDAE

ATRACTASPIS BIBRONII BIBRONII A. Smith

Atractaspis bibronii A. Smith, 1849, Ill. Zool. S. Africa, Rept., pl. lxxi.

Variation. (7 specimens.) Midbody scale rows 21; ventrals 218-236; anal entire; subcaudals 19-26, single; upper labials 5, the third and fourth, rarely fourth only, entering the orbit; lower labials 5, the first pair in contact behind the mental, the first three in contact with the anterior sublinguals, the third much the larg-

¹ Enemies — a 26½" mamba was disgorged by a *Psammophis s. sibilans* captured at Umvuma by D. S. Rider.

est; preocular 1; postocular 1; temporals 1+2. Tail length .05 to .07 of the total.

Colouration. Uniform purplish black above and below.

Size. Largest (SM/R.52) 538 (510+28) mm. from Umtali.

Venom. At 5 p.m. on 20.viii.55 I was bitten by a 318 mm. ♂ Burrowing Adder. I turned over a stone on an Umtali hillside and exposed the snake, which promptly dived down its hole. I seized the tail and pulled steadily, but the snake reversed suddenly and bit me twice on the left index finger and once on the right before I got it into a bag. As the adder was only a juvenile I decided to let the venom run its course and observe the effects. After 15 minutes the left finger was slightly swollen and a feeling of depression was observed. By 9 p.m. the left hand was swollen but not very painful and the depression had gone.

During the night the hand and wrist became excessively swollen; the index finger was twice its normal size and painful. The right index finger, having received a smaller amount of venom, was only slightly swollen, but the glands under both armpits were swollen. I was persuaded to go to the hospital, and was admitted at 7.30 a.m. I was given 10 cc. of Polyvalent Serum and also penicillin injections every six hours. The left hand was poulticed and this helped to bring the hand down to normal size after four days. A large blood blister formed at the fang punctures; this was cut open and drained for several days. On the 28th August a rash appeared on my limbs and spread throughout my body before disappearing. I was discharged from the hospital the following day, but exercise brought on a severe recurrence of the serum reaction. This time, in addition to the rash, I suffered paralysis of the knees and fingers. I returned to the hospital, where calcium injections loosened the joints after 24 hours. I had violent recurrences of the rash for another three days. The dead flesh around the fang punctures sloughed away, leaving a pit $\frac{1}{4}$ inch deep. I finally left the hospital on September 3rd.

Habits. This fossorial species is usually found under stones; a burrow often extends downwards for a foot or so, providing the snake with a more secure retreat.

Distribution. The eastern districts of Southern Rhodesia. The rest of the colony is inhabited by a population of intermediates.

Localities: Odzi; Imbeza; Umtali.

ATRACTASPIS BIBRONI \times ROSTRATA

Atractaspis bibronii (not A. Smith) Chubb, 1909b, p. 36; Tasman, 1953, p. 27; Isemonger, 1955, p. 90.

Variation. (23 specimens.) Midbody scale rows 21-23; ventrals 217-252; anal entire; subcaudals 20-27, mostly single; upper labials 5, the third and fourth entering the orbit (4, the second and third entering the orbit, on one side of an Essexvale snake); lower labials 5, the first pair in contact behind the mental, the first three in contact with the anterior sublinguals, the third much the largest; preocular 1; postocular 1; temporals 1+2 (1+3 on one side of a Chishawasha snake). Tail length .05 to .07 of the total.

Colouration. Uniform purplish-black above and below. Five snakes from Nyamandhlovu, Plumtree, Irisvale and Mchingwe River have the outer two rows of dorsal scales and the whole of the ventrum white. A Chishawasha snake has the sides and belly brownish with white blotches.

Size. Largest (NM/M.720) 553 (524+29) mm. from Chishawasha.

Diet. A Bulawayo snake contained a *Nucras intertexta holubi* with a head and body length of 75 mm. A Plumtree snake disgorged another lizard of the same species. A small specimen taken near the Mchingwe River disgorged the tail and partially digested body of a Cape Centipede-eater (*Aparallactus c. capensis*).

Venom. On 30.ix.55 I was bitten on the tip of the second finger of my left hand by the large Burrowing Adder from Chishawasha, recorded above. As I pinned the snake down, it twisted round and struck with one fang. This species does not open its mouth to bite; instead the lower jaw is contracted and the fangs brought down on each side of it. I ligatured the digit at the base and made some longitudinal cuts before squeezing out as much venom as possible. The finger became swollen during the night, with the characteristic throbbing pain. By the following day the pain had almost gone and I was fit enough to capture a ten-foot python.

Habits. As for the typical form. One specimen was taken at night as it was crossing a road.

Distribution. These snakes are intermediate between the typical form of South Africa and the race *rostrata* found north of the Zambezi. Whereas typical *bibronii* normally has 21 midbody scale rows and the race *rostrata* 23 rows, throughout most of Southern Rhodesia snakes with 21 and 23 scale rows occur side by side.

Localities: West Sebungwe; Trelawney; Chishawasha; Sawmills; Nyamandhlovu; Bulawayo; Plumtree; Essexvale; Balla Balla; Irisvale; Mchingwe River, Belingwe District; Bembesi.

CAUSUS RHOMBEATUS (Lichtenstein)

Sepedon rhombeatus Lichtenstein, 1823, Verz. Doubl. Mus. Berlin, p. 106.

Causus rhombeatus Boulenger 1902, p. 18; 1910, p. 521; Gough, 1908, p. 38; Chubb, 1909b, p. 36; FitzSimons, F. W., 1912, pp. 215, 216; Hewitt and Power, 1913, p. 165; FitzSimons, V. F., 1939, p. 24; Tasman, 1953, p. 27; Rose, 1955, pp. 166-167; Isemonger, 1955, p. 87; Broadley, 1957b, p. 115.

Native names of Rhombic Night-adder. *Changwa* (Sindebele); *Cheewa* (Cheshona).

Variation. (48 specimens.) Midbody scale rows 17-18, rarely 19; ventrals 138-151; anal entire; subcaudals 24-32; upper labials 6, excluded from the orbit; preoculars 1-3; suboculars 1-2; postoculars 1-2; temporals 2+3. Tail length .09 to .12 of the total.

Colouration. Above, pinkish, grey-brown or grey-green, with a darker forward-directed "V" on the head and a series of large, white or yellow-edged, dorsal rhombs. These markings may be very faint, often only visible when the body is inflated in anger. A Mount Hampden ♂ was uniform pinkish brown without a trace of markings. A series of dark lines radiate from the orbit. Ventrums, mother of pearl white to pinkish grey or black.

Size. Largest (UM/R.13) 813 (735+78) mm. from Odzani. Smallest (NM/M.806) 224 (203+21) mm. from Essexvale.

Breeding. A 578 mm. snake laid 14 eggs on 8.x.57.

Diet. Toads (*Bufo regularis* and *Bufo carens*) form the greater part of the night-adder's diet. Frogs (*Rana* spp.) are also taken.

Enemies. A Selukwe snake was killed by a chicken.

Defence. The normal reaction to a disturbance is to coil up and inflate the body with air, at the same time hissing loudly. Occa-

sionally a specimen will flatten its neck after the manner of a cobra and make off slowly.

Venom. W. Armitage of Umtali was bitten on the tip of his left index finger by an adult nightadder, which penetrated with only one fang. A burning pain was felt at the fang puncture. A ligature was applied and the bite cut open; it proved impossible to induce bleeding. After half an hour sporadic pains were experienced as far as the wrist. Patient hot and flushed. The following day found the victim depressed and suffering from a headache and sore throat. Another 24 hours brought pains in the kidneys and the next day saw the patient confined to bed with a fever which broke the same evening, 72 hours after the bite.

Habits. This species mainly hunts its amphibian prey at night, although it may often be found basking during the day. A large uniform grey male, taken on Vumba Mountain, was engaged in swallowing a large *Bufo regularis* at 3 p.m. on a sunny day.

Longevity. A Mount Hampden snake lived for 27 months in captivity and grew from 560 mm. to 720 mm. in total length.

Distribution. Widely distributed throughout Southern Rhodesia. Common in Mashonaland and the Eastern Districts but rather scarce in Matabeleland.

Localities: Trelawney; Mazoe; Mount Hampden; Salisbury; Huuyani; Prince Edward Dam; Chishawasha; Marandellas; Odzi; Inyanga; Odzani; Vumba Mtn.; Chirinda Forest; Gatooma; Selukwe; Bulawayo; Tuli Reservoir; Hope Fountain; Matopos; Cyrene; Empandene; Essexvale.

CAUSUS DEFILIPPII (Jan)

Heterodon De Filippii Jan, 1862, Zool. Anat. Fisiol., 2, p. 225.

Causus deflippii Boulenger, 1902, p. 18; 1910, p. 521; Chubb, 1909a, p. 597; 1909b, p. 36; FitzSimons, F. W., 1912, pp. 215, 216; FitzSimons, V. F., 1939, p. 24; Tasman, 1953, p. 27; Broadley, 1957b, p. 115.

Causus dephillippii (sic) Rose, 1955, p. 167.

Causus de fillippii (sic) Isemonger, 1955, p. 88.

Native name of Snouted Night-adder. *Changwa* (Sindebele), but generic.

Variation. (53 specimens.) Midbody scale rows 17, rarely 16 or 18; ventrals 112-127; anal entire; subcaudals 10-19; upper labials 6-7, excluded from the orbit (3rd labial enters orbit on

one side of a Chirinda Forest snake); preoculars 2; suboculars 1-2 (rarely 0 or 3); postoculars 1-2; temporals 2+3. Tail length .05 to .09 of the total.

Colouration. Above, pink, mauve or pale brown, with a broad, slightly darker, dorsal stripe and a vertebral series of large, dark brown, blotches or backward-directed chevrons. A well-defined "V" on the back of the head has its apex on the frontal. A dark band passes through the orbit and the labial sutures are black. Below, glossy black in juveniles, becoming lighter in adults.

Size. Largest 410 (380+30) mm. from Umtali. Smallest (NM/M.715) 102 (95+7) mm. from Bulawayo.

Sexual dimorphism. In 24 males the range of ventrals is 112-117; range of subcaudals is 14-19, and the tail length is .07 to .09 of the total. In 22 females the range of ventrals is 120-127; range of subcaudals is 10-16, and the tail length is .05 to .07 of the total.

Breeding. A captive ♀ laid two eggs on 1.i.56 and was seen to mate the following day. Many hatchlings are killed while basking on the roads in February and March.

Diet. Captive specimens took small toads (*Bufo regularis*; *Bufo carens*) and frogs (*Rana delalandii*; *Phrynobatrachus natalensis*). A captive specimen at Umtali is reported to have seized and swallowed a small *Boaedon f. fuliginosus* in mistake for a frog while being fed. The bulky meal was later disgorged (D. K. Blake).

Defence. These small snakes behave like a puffadder when disturbed, inflating the body with air and hissing fiercely. They seem rather reluctant to bite.

Venom. W. Armitage and D. K. Blake were both bitten on the hand by Umtali specimens within two hours. No treatment was given. In each case the hand became swollen to the wrist and a dull throbbing pain was observed. The swelling subsided after three days, leaving a feeling of stiffness. There was no sloughing away of flesh.

Habits. The prominent upturned rostral suggests fossorial habits, but the habits of this smaller species do not seem to differ from those of *C. rhombcatus*.

Distribution. Widely but rather patchily distributed throughout Southern Rhodesia. This species is locally abundant at Umtali, where it seems to completely replace *C. rhombcatus*. At

Odzi, only 20 miles away, the latter species is common and *defilippii* very scarce.

Localities: Karoi; Trelawney; Mazoe; Salisbury; Musami; Untali; Vumba Mountain; Chirinda Forest; 165 miles north of Bulawayo; Gwaai; Turk Mine; Bulawayo; Khami; Matopos; Figtree; Empandene; Essexvale; Balla Balla; Irisvale; Mount Darwin.

BITIS ARIETANS ARIETANS (Merrem)

Cobra lachesis Laurenti, 1768, Syn. Rept., p. 104.

Vipera (*Echidna*) *arietans* Merrem, 1820, Vers. Syst. Amphib., p. 152.

Bitis arietans Boulenger, 1902, p. 18; 1910, p. 522; Gough, 1908, p. 39;

Chubb, 1909a, p. 597; 1909b, p. 36; FitzSimons, F. W., 1912, pp. 216,

217; Hewitt and Power, 1913, p. 165; FitzSimons, V. F., 1939, p. 24;

Tasman, 1953; p. 25; Rose, 1955, pp. 156-161; Isemonger, 1955, p. 88.

Native names for the Puffadder. *Ibululu* (Sindebele); *Chiva* or *M'vumbi* (Cheshona).

Variation. (52 specimens.) Midbody scale rows 31-36; ventrals 126-141; anal entire; subcaudals 17-36; smooth; upper labials 12-15. Tail length .05 to .16 of the total.

Colouration. Dark grey to reddish brown above, with backward-directed yellow or white and black chevrons. Yellow below with black markings.

Size. Largest ♂ (NM/M.958) 915 (800+115) mm. from Khami. Largest ♀ 990 (920+70) mm. from Untali. New-born young measure just over 200 mm. in total length.

Sexual dimorphism. In 23 males the range of ventrals is 126-136; range of subcaudals is 30-36, and the tail length is .12 to .16 of the total. In 27 females the range of ventrals is 131-141; range of subcaudals is 17-25, and the tail length is .06 to .09 of the total.

Breeding. Captive specimens observed mating on 26.viii.56. A 30" ♀ produced a brood of 35 young on 2.xii.57 at Essexvale. Another Essexvale specimen, 2'8" in length, contained 37 well-developed young at the beginning of November.

Dict. All stomachs containing food held rats. Captive specimens took rats readily. When hungry, some specimens would take toads (*Bufo carens*; *Bufo regularis*) rather reluctantly, other consistently refused to take anything but rats and starved to death rather than swallow a toad. On the other hand, juve-

niles fed readily on small toads and frogs (*Rana delalandii*). One took a shrew (*Crocidura* sp.).

Enemies. On two occasions large cobras (*Naja h. haje*) were found to contain adult puffadders. Both this species and *Naja n. mossambica* readily devoured new-born puffadders in captivity.

Defence. Although it may sometimes try to escape when approached, more often than not the puffadder remains motionless and its colouration makes it difficult to see in dry grass. As it often lies on footpaths through long grass, waiting for an unwary rat, this species is responsible for the majority of the cases of snakebite. Often the puffadder gives warning of its presence by inflating the body with air and hissing fiercely; at the same time the head is drawn back over the body in a striking coil.

Venom. As puffadder bites are invariably received on the limbs, prompt treatment can usually localise the venom and prevent death. The effects are unpleasant, local haemorrhage often causes an area around the bite to turn black and slough away and sloughing of the skin often recurs for several years afterwards.

Habits. The Puffadder does most of its hunting at night, but is often found basking during the day. It frequently becomes a road casualty.

Distribution. Common in Matabeleland but less plentiful in other parts of the colony. This species seems to be very scarce in Salisbury District.

Localities: Sinoia; Mazoe; Hunyani; Gatooma; Salisbury; Marandellas; Odzi; Untali; Mount Silinda; Chikore; Victoria Falls; Zambezi-Sebungwe Junction; Shangani River; Gwaai; Bulawayo; Khami; Essexvale; Balla Balla; Irisvale; Glass Block; Gwanda; Tod's Hotel; Beitbridge; Mount Darwin; Buby River; Umvuma.

BITIS GABONICA GABONICA (Duméril and Bibron)

Echidna gabonica Duméril and Bibron, 1854, VII, p. 1423, pl. lxxxv.

Bitis gabonica Isemonger, 1955, p. 88; FitzSimons, V. F., 1958, p. 211.

Variation. (4 specimens.) Midbody scale rows 39-46; ventrals 134-136; anal entire; subcaudals 19-22; upper labials 16-17. Tail length .06 to .09 of the total. All four specimens are females.

Colouration. Head buff, a dark brown triangular wedge, running from the orbit straight down to the lip and diagonally back to the angle of the jaw; this marking is divided by a narrow light line or spot. A vertebral series of sharply defined buff rectangles are connected by hour-glass shaped rich brown markings. The lateral markings consist of a complex geometrical pattern, composed of bold triangles in shades of buff, purple, brown and pink. The ventrum is buff with dark grey infuscations.

Size. Largest (UM/R.25) 1266 (1196+70) mm. from Dzoroka, Chipinga Dist.

Distribution. This massive viper ascends the river valleys from Mocambique and is liable to be found anywhere along the Eastern Border. It is reported to be not uncommon in the Inyanga Tea Estates. The Stapleford specimen was taken on the edge of a plantation at 6,000 feet.

Localities: Pungwe Valley; Hondi Valley; Stapleford; Dzoroka.

BITIS CAUDALIS (A. Smith)

Vipera caudalis A. Smith, 1839, Ill. Zool. S. Africa, Rept., pl. vii.

Bitis caudalis Chubb, 1909a, p. 597; 1909b, p. 36; Boulenger, 1910, p. 523;

FitzSimons, F. W., 1912, pp. 217, 218; Isemonger, 1955, p. 89.

Bitis candalis (misprint) Tasman, 1953, p. 27.

Variation. (8 specimens.) Midbody scale rows 24-27; ventrals 120-134; anal entire; subcaudals 16-26; upper labials 11-13. Tail length .07 to .11 of the total.

Colouration. Males — Head light red-brown passing to grey on the temples, a yellow line connecting the supraocular "horns," dark lines radiating from orbit to mouth, a U-shaped dark red-brown marking on back of head extending as a pair of bars on the neck. Body blue-grey dorsally, with a series of dark red-brown, yellow-edged, blotches, large and more or less oval in shape. Laterally light red-brown with a series of oval markings, which are grey above and dark red-brown, edged with yellow, below. Ventrums white, tinged with orange laterally. Females — Light sandy brown with indistinct rows of dorsal and dorso-lateral blotches, which are only slightly darker than the ground colour. Ventrums buff.

Size. Largest ♂ (NM/M.357) 301 (270+31) mm. from Beitbridge. Largest ♀ (NM/M.939) 322 (300+22) mm. from Bulawayo.

Defence. A very truculent and "explosive" little viper. Hisses very loudly for so small a snake and strikes fiercely at anything within range.

Habits. A Horned Viper from Bulawayo could not be induced to "sidewind." Local conditions seem unsuitable for a species which has become specialised for life in loose sand. It would seem that these Bulawayo specimens have spread out of their normal environment.

Distribution. Matabeleland.

Localities: Insiza; Bulawayo; Westacre; Beitbridge.

BITIS ATROPOS (Linné)

Coluber atropos Linné, 1754, Mus. Ad. Frid., p. 22, pl. xiii, fig. 1.

Bitis atropos Isemonger, 1955, p. 90; FitzSimons, V. F., 1958, p. 210.

Variation. (7 specimens.) Midbody scale rows 29-31; ventrals 121-134; anal entire; subcaudals 18-25; upper labials 11-12. Tail length .07 to .11 of the total.

Colouration. Above, grey-brown with a double series of dark dorsal blotches arranged in pairs on either side of the vertebral line: these abut against an ill-defined lighter dorsolateral line. Below which there is a similar series of dark blotches. There are some dark markings on the top of the head. Below, chin white or cream with some sharply-defined black markings on the lower labials, ventrum white to dark grey.

Size. Largest ♂ (NM/M.1702) 347 (310+37) mm. from Chimanimani Mts. (5,500'). Largest ♀ (NM/M.1704) 288 (268+20) mm. from Chimanimani Mts. (8,000').

Diet. A juvenile from Inyanga North, in captivity at Umtali, gorges himself on toads (*Bufo regularis*) until he cannot coil up (D. K. Blake).

Venom. W. W. Armitage of Umtali was bitten on the thumb at 9.30 a.m. on 12.xii.57 by a 5½ inch *Bitis atropos* from Inyanga North. One fang penetrated deeply, the other merely scoring the surface. Cuts were made through the fang punctures, but little bleeding was induced by squeezing. By 9.45 the thumb had begun to swell up and was very painful; the pain eased off

after 15 minutes. By 10.45 the patient was light-headed and had difficulty in focusing his eyes. This gradually became worse and his sense of balance was also impaired. By 11 a.m. the patient was staggering and cross-eyed, the eyes being heavy-lidded and vision blurred. Armitage then received a total of 3 cc. polyvalent serum in the thumb and biceps. He was admitted to the hospital

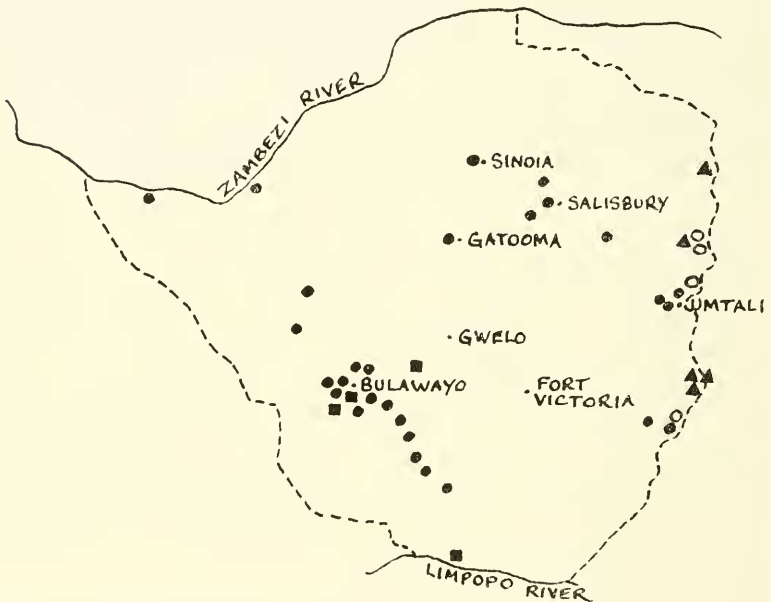


Fig. 6. Recorded localities for *Bitis*.

- *Bitis arictans arietans* (Merrem)
- *Bitis gabonica gabonica* (Duméril and Bibron)
- *Bitis caudalis* (A. Smith)
- ▲ *Bitis atropos* (Linné)

10 minutes later, now only semiconscious and staggering. He had by now lost all sense of taste and smell. The patient was given 20 cc. of polyvalent serum in the buttocks and put to bed. By 11.30 the hand was swollen up to the wrist; the pupils were dilated and showed no reaction to light. By noon the patient was again fully conscious.

Armitage's condition showed no change on the following day, followed by a slight improvement on the 14th. By the 15th, the hand was back to normal, the thumb remaining swollen. The pupils were normal, but the left eyelid remained closed, the right being half open. There was still no sense of taste or smell. Both eyes were fully open the next day and Armitage was discharged from the hospital. His sense of smell returned on the 17th, but focusing of the eyes was still slow. The sense of taste returned the following day. The site of the bite was numb, but there was no sloughing of flesh around the fang punctures, which is a normal feature of viperine bites.

Habitat. The University of Cape Town sent an expedition to the Chimanimani Mountains on the Eastern Border of Southern Rhodesia in February 1958. A member of the Expedition, Mr. J. R. Grindley, collected 4 specimens of *Bitis atropos* and presented them to the National Museum. His field notes on these Mountain Vipers are given verbatim: (NM/M.1701) . . . "In long grass by stream on floor of Bundi Valley at 5,300 ft." (NM/M.1702) . . . "On path to Martin's Falls in open grassland at 5,500 ft." (NM/M.1703) . . . "In grassland above Martin's Falls at 5,000 ft." (NM/M.1704) . . . "In grass near summit of Point 71 at 8,000 ft."

Distribution. The Eastern Districts of Southern Rhodesia. Not entirely restricted to the mountains, for the Inyanga North specimen came from an altitude of approximately 2,500 feet.

Localities: Inyanga North (ca. 2,500'); Pungwe River Causeway (ca. 5000'); Chimanimani Mountains (5,000' to 8,000').

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Glossary of Scientific Terms.

- Anal, the shield immediately preceding the vent.
- Chin-shields, see sublinguals.
- Frontal, see Fig. 10.
- Internasal, see Fig. 10.
- Loreal, see Fig. 10.
- Labial, one of the shields bordering the mouth.
- Lower labial, see Fig. 10.
- Mental, see Fig. 10.
- Midbody scales, those, other than ventral shields, encircling the body at a point midway between snout and vent.
- Nasal, see Figs. 8, 9, 10.
- Ocular, see Figs. 8, 9.
- Parietal, see Fig. 10.
- Postocular, see Fig. 10.
- Prefrontal, see Figs. 8, 9, 10.
- Preocular, see Figs. 8, 10.
- Rostral, see Figs. 8, 9, 10.
- Subcaudals, the series of scales beneath the tail, which may be single or (more often) paired.
- Sublinguals, see Fig. 10.
- Subocular, see Fig. 10.
- Supraocular, see Figs. 8, 9, 10.
- Symphysial, see Mental.
- Temporal, see Fig. 10.
- Upper labial, see Figs. 8, 9, 10.
- Ventrals, the series of broad plates on the belly.

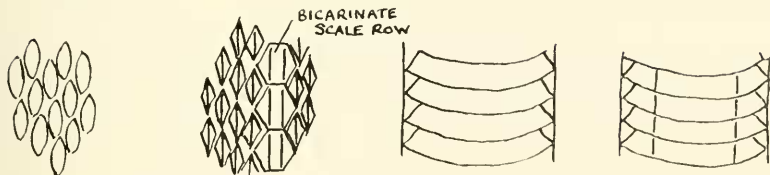


Fig. 7. From left to right, dorsal scales, smooth, dorsal scales, keeled, ventral scales, smooth, ventral scales, keeled.

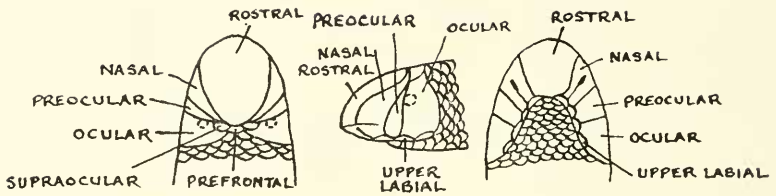


Fig. 8. Head shields of *Typhlops schlegelii mucruso* (Peters).

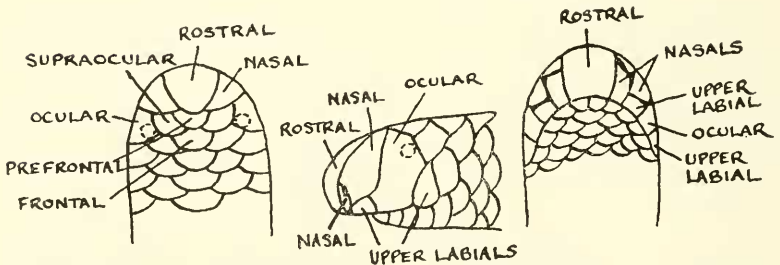


Fig. 9. Head shields of *Leptotyphlops longicauda* (Peters).

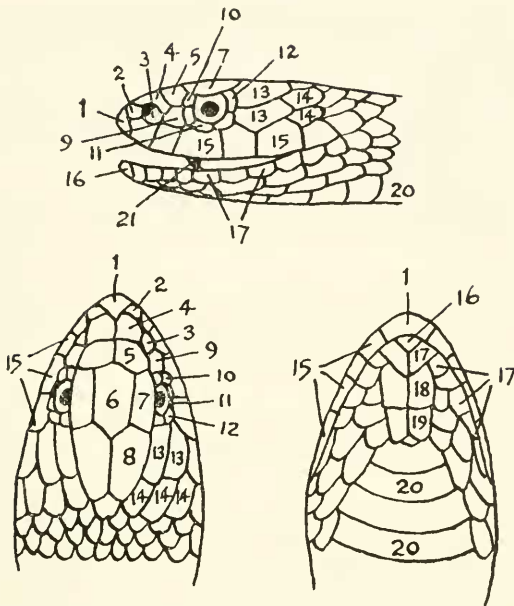


Fig. 10. Head shields of *Causus rhombecatus* (Lichtenstein).

- | | |
|---------------------|---------------------------|
| 1. rostral; | 11. subocular; |
| 2. anterior nasal; | 12. postocular; |
| 3. posterior nasal; | 13. anterior temporal; |
| 4. internasal; | 14. posterior temporal; |
| 5. prefrontal; | 15. upper labial; |
| 6. frontal; | 16. mental; |
| 7. supraocular; | 17. lower labial; |
| 8. parietal; | 18. anterior sublingual; |
| 9. loreal; | 19. posterior sublingual; |
| 10. preocular; | 20. ventral; |
| | 21. poison fang. |

A Key to the Snakes of Southern Rhodesia

A. *Key to Families*

1. Body encircled by small scales more or less uniform in size; 3 or 4 scales immediately preceding vent; eye minute, when distinguishable, beneath a shield 2
 Body not encircled by small scales owing to the presence on the belly of a longitudinal series of transversely enlarged plates, known as ventrals; 1 or 2 scales immediately preceding vent; eye clearly visible beneath a transparent "watchglass" scale 3
2. Ocular shield not bordering mouth; 18 or more scales round middle of body; tail as long as or only slightly longer than broad; size small to moderate *TYPHLOPIDAE* (B)
 (Blind-Snakes)
 Ocular shield bordering mouth; 14 scales round middle of body; tail much longer than broad; size very small, wormlike
 *LEPTOTYPHLOPIDAE* (C)
 (Worm-Snakes)
3. Ventral shields much narrower than body; midbody scale rows more than 75; vestigial limbs present, discernible as a pair of "claws" before the vent *BOIDAE* (D)
 (Boas and Pythons)
 Ventral shields as broad as, or nearly as broad as body; midbody scale rows less than 50; no vestigial limbs present 4
4. No enlarged poison fangs at *front* of jaw¹ *COLUBRIDAE* (E)
 (Typical Snakes)
 One or more pairs of enlarged poison fangs at front of jaw 5
5. Poison fangs immovable, not enclosed in a sheath of membrane
 *ELAPIDAE* (F)
 (Cobras, Mambas, etc.)
 Poison fangs movable and very large, so folded back when not in use, encased in a sheath of membrane *VIPERIDAE* (G)
 (Adders and Vipers)

B. *Key to the TYPHLOPIDAE* (Blind Snakes) of Southern Rhodesia

- Midbody scale rows 28; diameter into length 41-50 times ..
 *Typhlops delalandii*
 (Delaland's Blind-Snake)
- Midbody scale rows 30 or more; diameter into length 21-53 times
 *Typhlops s. mucroso*
 (Zambezi Blind-Snake)

¹Warning: Snakes of the genus *Psammophis* have a pair of greatly enlarged fang-like teeth below the anterior border of the eye, the grooved fangs being situated below the posterior border of the eye.

C. Key to the *LEPTOTYPHLOPIDÆ* (Worm-Snakes) of Southern Rhodesia

1. Rostral in contact with supraocular; black or grey in colour 2
 Rostral separated from supraocular by the nasal; flesh pink in colour
 *Leptotyphlops longicauda*
 (Long-tailed Worm-Snake)
2. Rostral very large, more than twice width of nasal *Leptotyphlops scutifrons*
 (Peters' Worm-Snake)
 Rostral narrow, less than twice width of nasal
 *Leptotyphlops conjuncta*
 (Jan's Worm-Snake)

D. Key to the *BOIDÆ* (Pythons) of Southern Rhodesia

- Only one species occurring south of the Zambezi *Python sebae*
 (African Python)

E. Key to the *COLUBRIDÆ* (Typical Snakes) of Southern Rhodesia

1. Subcaudals mostly in pairs 2
 Subcaudals single 39
2. A loreal shield present between postnasal and preocular ... 3
 No loreal shield present 35
3. Pupil round (horizontal only in *Thelotornis*) AND anal divided . 12
 Pupil vertically sub-elliptic AND/OR anal entire 4
4. Dorsal scales smooth 5
 Dorsal scales strongly keeled in 15 rows at midbody 11
5. Snout rounded; prefrontals and internasals paired 6
 Snout with angular horizontal edge; prefrontal usually single ... 22
6. Midbody scale rows 25-33 *Boaedon f. fuliginosus*
 (Common House Snake)
 Midbody scale rows 15-21 7
7. Midbody scale rows 15; a single postocular ... *Duberria l. rhodesiana*
 (Rhodesian Slug-eater)
 Midbody scale rows 17 or more; two or three postoculars 8
8. -No pair of enlarged grooved fangs situated below the posterior border
 of the eye 9
 A pair of enlarged grooved fangs situated below the posterior border
 of the eye, separated by an interspace from the preceding teeth ... 24
9. Midbody scale rows 19-21; subcaudals more than 50; nostril directed
 upwards from between two nasals; semi-aquatic 10
 Midbody scale rows 17; subcaudals less than 50; nostril directed out-
 wards from a single nasal; terrestrial *Lycophidion c. capense*
 (Cape Wolf Snake)

10. Midbody scale rows 19 *Lycodonomorphus r. rufulus*
(Brown Water Snake)
Midbody scale rows 21 *Lycodonomorphus r. mlanjensis*
(Mlanje Water Snake)
11. Ventrals 195-220; subcaudals 44-58; vertebral scale row and ventrals
ivory white *Mehelya c. capensis*
(Cape File-Snake)
Ventrals 173-184; subcaudals 60-68; vertebral scale row blackish,
ventrals brown *Mehelya nyassac*
(Nyasa File-Snake)
12. Midbody scale rows 25-27; snout pointed *Pseudaspis cana*
(Mole Snake)
Midbody scale rows 11-21 13
13. Pupil round 14
Pupil horizontal; body extremely slender and vine-like 27
14. Scales smooth 15
Scales strongly keeled *Dispholidus typus*
(Boomslang)
15. A broad dark vertebral band with numerous short cross-bars or stag-
gered to form an irregular zig-zag line; underside dark grey flecked
with brown; not exceeding 450 mm. in length *Hemirhagerrhis n. nototaenia*
(Eastern Bark-Snake)
Markings and colouration not as above 16
16. No pair of enlarged grooved fangs situated below the posterior border
of the eye 17
A pair of enlarged grooved fangs situated below the posterior border
of the eye, separated by an interspace from the preceding teeth 28
17. Midbody scale rows 21; ventrals 175-204 *Meizodon s. semiornata*
(Semiornate Snake)
Midbody scale rows 19 or fewer 18
18. Midbody scale rows 19; ventrals 140-149 *Natriciteres o. olivacea*
(Olive Marsh-Snake)
Midbody scale rows 17 or fewer 19
19. Midbody scale rows 17 (rarely 15); ventrals 132-141; 3 postoculars;
colour in life not green *Natriciteres o. uluguruensis*
(Montane Marsh-Snake)
Midbody scale rows 15; ventrals 148 or more; 2 postoculars; colour in
life green 20
20. Ventrals 148-169; subcaudals 77-115, rounded or angular but without
keels 21
Ventrals 179-204; subcaudals 121-142, angular and strongly keeled like
the ventrals *Philothamnus s. semivariatus*
(Variegated Bush-Snake)

21. Usually two labials entering orbit; subcaudals 77-103
 *Philothamnus hoplogaster*
 (Southeastern Green-Snake)
 Usually three labials entering orbit; subcaudals 94-115
 *Philothamnus i. irregularis*¹
 (Western Green-Snake)
22. Internasal single; snout horizontal *Prosymna a. stuhlmanni*
 (Eastern Shovel-snout)
 Internasals paired; snout upturned 23
23. Internasals forming a median suture; habit moderate
 *Prosymna lineata*
 (Peters' Shovel-snout)
 Internasals separated by rostral; habit slender
 *Prosymna s. sundevallii*
 (Sundevall's Shovel-snout)
24. Midbody scale rows 19 25
 Midbody scale rows 17 26
25. Ventrals 202-241; salmon pink above with black dorsal blotches
 *Telescopus s. semiannulatus*
 (Tiger Snake)
 Ventrals 154-168; black to olive above, flecked with white
 *Crotaphopeltis h. hotamboeia*
 (White-lipped Snake)
26. Ventrals 172-195; eye large with vertically elliptical pupil
 *Chamaetortus a. aulicus*
 (Cross-barred Tree-Snake)
 Ventrals 133-149; eye moderate with round pupil
 *Amplorhinus multimaculatus*
 (Many-spotted Snake)
27. Ventrals 163-176; range northwest of colony *Thelotornis k. oatesii*
 (Oates' Vine-Snake)
 Ventrals 146-164; range southeast of colony *Thelotornis k. capensis*
 (Cape Vine-Snake)
28. Rostral shield on snout prominent, beak-like; colour above pinkish-brown
 *Rhamphiophis o. rostratus*
 (Eastern Brown Beaked-Snake)
 Rostral shield on snout rounded normally 29
29. Maxillary teeth form a continuous series up to the interspace which separates them from the posterior pair of enlarged grooved fangs . . . 30
 Maxillary teeth interrupted below the anterior border of the eye by two greatly enlarged fang-like teeth, separated before and behind by an interspace, followed by more small maxillary teeth, then a third inter-

¹ If a brown dorsal stripe is present, refer to *Philothamnus ornatus* (Ornate Green-Snake).

- space preceding the enlarged grooved fangs situated below the posterior border of the eye 31
30. Usually a single anterior temporal; subcaudals 83-105; ventral markings consist of short black *transverse* dashes at ends of ventrals
Dromophis lineatus
 (Buff-striped Grass-Snake)
- Two anterior temporals; subcaudals 50-67; pink flecking at ends of ventrals *Psammophylax t. tritaeniatus*
 (Three-lined Grass-Snake)
31. Midbody scale rows 17 32
 Midbody scale rows less than 17 33
32. Habit robust; uniform olive above or with black scale edgings forming narrow black longitudinal lines; yellow or white below, uniform or with an ill-defined series of longitudinal, discontinuous dashes; subcaudals 92-107; 8 upper labials, the fourth and fifth entering the orbit
Psammophis s. sibilans
 (Olive Grass-Snake)
- Habit slender; brown above, with a pair of yellow dorsolateral stripes; below, two narrow but well-defined black lines; subcaudals 105-123; normally 9 upper labials, the fourth, fifth and sixth entering the orbit
Psammophis s. subtaeniatus
 (Southern Stripe-bellied Sand-Snake)
33. Midbody scale rows 15 34
 Midbody scale rows 11 *Psammophis angolensis*
 (Dwarf Sand-Snake)
34. Ventrals 159-175; subcaudals 89-100 *Psammophis jallae*
 (Rhodesian Sand-Snake)
- Ventrals 144-157; subcaudals 61-73 *Psammophis crucifer*
 (Cross-marked Grass-Snake)
35. Midbody scales keeled in 21-27 rows; pupil vertical . *Dasypeltis scabra*
 (Common Egg-eater)
- Midbody scales smooth in 15-21 rows; pupil round 36
36. Habit extremely slender; head and tail black and similar in appearance, body with black and yellow longitudinal stripes; one labial entering orbit *Chilorhinophis g. gerardi*
 (Western Striped Burrowing-Snake)
- Habit moderate; plumbeous or reticulated in black and white above; two labials entering orbit 37
37. Prefrontals in broad contact; midbody scale rows 15, 19 or 21 38
 Prefrontals widely separated by the frontal and much reduced in size so that they resemble preoculars; internasals in broad contact with the frontal; midbody scale rows 17 *Xenocalamus b. bicolor*
 (Bicolored Burrowing-Snake)

38. Midbody scale rows 19-21; 6 upper labials, the third and fourth entering the orbit *Calamclaps u. miolopsis*
(Nyasa Purple-glossed Snake)
Midbody scale rows 15; 5 upper labials, the second and third entering the orbit *Calamclaps v. websteri*
(Webster's Burrowing Snake)
39. First lower labial in good contact with its fellow behind the mental *Aparallactus l. lunulatus*
(Reticulated Centipede-eater)
First pair of lower labials separated by the anterior sublinguals 40
40. Nostril normally in a divided nasal; subcaudals 55-59; above, steel-blue to black with two sulphur yellow nuchal collars; below, steel-blue *Aparallactus guentheri*
(Black Centipede-eater)
Nostril normally in an entire nasal; subcaudals 30-63; above, brown or reddish with a black head and neck; below, yellowish white 41
41. Ventrals 137-170; range Mashonaland and the Eastern Districts *Aparallactus c. capensis*
(Cape Centipede-eater)
Ventrals 156-181; range Matabeleland
..... *Aparallactus capensis capensis* × *boagci*
(Intermediates between the Cape and Angola Centipede-eaters)
- F. *Key to the ELAPIDAE* (Cobras, Mambas, etc.) of Southern Rhodesia
1. Head short; snout broader than long; subcaudals less than 90 2
Head long and narrow; snout not broader than long; subcaudals more than 90 7
2. Scales in 13 rows at midbody; nostril between two nasals
..... *Elapsoidea s. decosteri*
(Southeastern Garter-Snake)
Scales in 17 or more rows at midbody; internasal bordering the nostril 3
3. Rostral very large, detached at sides; ventrals less than 150; subcaudals less than 40 *Aspidelaps s. scutatus*
(Shield-Snake)
Rostral moderate, not detached at sides; ventrals more than 150; subcaudals more than 40 4
4. Eye separated from upper labials by suboculars 5
Eye in contact with third, or third and fourth upper labials 6
5. Midbody scale rows usually 17; range northwest of colony
..... *Naja h. anchietae*
(Anchieta's Cobra)

- Midbody scale rows usually 19; range all S. Rhodesia except the extreme northwest *Naja h. haje*
(Egyptian Cobra)
6. Midbody scale rows 21-25; sixth upper labial not largest, not in contact with postoculars *Naja n. mossambica*
(Mozambique Spitting-Cobra)
- Midbody scale rows 17-19; sixth upper labial largest and deepest, in contact with the postoculars *Naja melanoleuca*
(Forest Cobra)
7. Midbody scale rows 17-21; ventrals 201-232; buccal membranes inside mouth bluish white *Dendroaspis angusticeps*
(Southern Green-Mamba)
- Midbody scale rows 21-25; ventrals 242-282; buccal membranes inside mouth bluish grey to black *Dendroaspis p. polylepis*
(Southern Brown-Mamba)
- G. *Key to the VIPERIDAE* (Adders and Vipers) of *Southern Rhodesia*
1. Top of head covered with large symmetrical shields; pupil round; reproduction oviparous 2
Top of head covered with numerous small scales; pupil vertical; reproduction ovo-viviparous 5
2. No loreal shield present; eye minute; ventrals more than 200; subcaudals mostly single; dorsal scales smooth; habit slender 3
A loreal shield present; eye moderate; ventrals less than 160; subcaudals paired; dorsal scales obtusely keeled; habit moderately robust 4
3. Midbody scale rows 21; range Eastern Districts *Atractaspis b. bibronii*
(Southern Bibron's Burrowing-Adder)
- Midbody scale rows 21-23; range S. Rhodesia excluding Eastern Districts *Atractaspis bibronii bibronii* × *rostrata*
(Intermediate Bibron's Burrowing-Adder)
4. Snout more or less rounded; ventrals 120-156; subcaudals 24-32 *Causus rhombeatus*
(Rhombic Night-Adder)
- Snout prominent, the rostral more or less upturned; ventrals 110-128; subcaudals 10-19 *Causus deflippii*
(Snouted Night-Adder)
5. Midbody scale rows 39 or more; often a pair of horns on the snout *Bitis g. gabonica*
(Eastern Gaboon Viper)
- Midbody scale rows less than 39; no horns on snout 6

6. Midbody scale rows 24-27; a pair of supraocular horns; subcaudals strongly keeled distally *Bitis caudalis*
(Horned Viper)
- Midbody scale rows 31-37; no supraocular horns; subcaudals smooth . . . 7
7. Nostril directed upwards; a dorsal series of backward directed yellow and black chevrons; habitat savanna *Bitis a. arietans*
(Puff-Adder)
- Nostril directed upwards and outwards; four longitudinal dorsal series of large dark spots; habitat usually mountainous terrain . *Bitis atropos*
(Mountain Viper)

ALPHABETICAL INDEX OF LOCALITIES IN SOUTHERN
RHODESIA

A

Amandas, Mazoe Dist., 35 mls. N of Salisbury.

B

Balla Balla, Umzingwane Dist., 35 mls. SE of Bulawayo.
Bambata Cave, Matobo Dist., 30 mls. SSW of Bulawayo.
Banket, Lomagundi Dist., 50 mls. NW of Salisbury.
Beitbridge, Gwanda Dist., Limpopo River.
Belingwe, Belingwe Dist., 15 mls. SW of Shabani.
Bembesi, Bubi Dist., 25 mls. NE of Bulawayo.
Bindura, Mazoe Dist., 40 mls. NE of Salisbury.
Birchenough Bridge, Sabi River, 70 mls. S of Umtali.
Bubye River, affluent of Limpopo River, Matabeleland.
Bulawayo, Provincial Capital of Matabeleland.
Bushtick Mine, Umzingwane Dist., 30 mls. E of Bulawayo.

C

Changadzi River, affluent of Sabi River, just N of Birchenough Bridge.
Charter Estates, Charter Dist., near Enkeldoorn.
Chikore, Chipinga Dist., 12 mls. W of Mount Silinda.
Chilimanzi, Chilimanzi Dist., 35 mls. N of Fort Victoria.
Chimanimani Mts., Melsetter Dist., on the Mozambique border.
Chipinga, Chipinga Dist., 85 mls. S of Umtali.
Chirinda Forest, Chipinga Dist., on summit of Mount Silinda.
Chirundu, Urungwe Dist., Zambezi River, Salisbury-Lusaka road bridge.

Chishawasha, Goromonzi Dist., 12 mls. E of Salisbury.
Cleveland Dam, 6 mls. E of Salisbury.
Crosby Farm, 25 mls. N of Bulawayo.
Cyrene, Matobo Dist., between Westacre and Matopos.

D

Dadaya, Belingwe Dist., 8 mls. W of Shabani.
Deka, Wankie Dist., 10 mls. W of Wankie.
Devon Farm, Umtali Dist., 30 mls. S of Umtali on Odzi River.
Devuli River Bridge, 7 mls. W of Birchenough Bridge.
Domboshawa, Goromonzi Dist., 16 mls. N of Salisbury.
Donnington Farm, Hartley Dist., near Norton.
Dragon's Tooth, Chimanmani Mts., above the Haroni valley.
Driefontein, Chilimanzi Reserve, 15 mls. SE of Umvuma.
Dzoroka Farm, Chipinga Dist., 20 mls. SE of Chipinga.

E

Eldorado, Lomagundi Dist., 3 mls. E of Sinoia.
Empandene, Bulalima-Mangwe Dist., 15 mls. S of Plumtree.
Enkeldoorn, Charter Dist., 85 mls. S of Salisbury.
Essexvale, Umzingwane Dist., 25 mls. SE of Bulawayo.

F

Fatima, Nyamandhlovu Dist., 95 mls. NW of Bulawayo.
Figtree, Matobo Dist., 22 mls. SW of Bulawayo.
Filabusi, Insiza Dist., 50 mls. SE of Bulawayo.
Fort Usher, Matobo Dist., 15 mls. S of Bulawayo.
Fort Victoria, Victoria Dist., 145 mls. E of Bulawayo.
Freda Mine, Gwanda Dist., 15 mls. W of Gwanda.

G

Gatooma, Hartley Dist., 75 mls. N of Gwelo.
Gazuma Pan, Wankie Dist., on Bechuanaland border 65 mls. W of Wankie.
Glass Block, Gwanda Dist., 22 mls. N of Gwanda.
Glen Lorne, 10 mls. NE of Salisbury.
Glenorchy, near Insiza.
Grand Reef, Umtali Dist., 15 mls. W of Umtali.
Gwaai River, affluent of Zambezi River, Matabeleland.
Gwaai (Siding), Nyamandhlovu Dist., 85 mls. NE of Bulawayo.

- Gwamayaya River, affluent of Shangani River, flowing into it from the north at a point 100 mls. N of Bulawayo.
 Gwanda, Gwanda Dist., 60 mls. SE of Bulawayo.
 Gwelo, Gwelo Dist., 95 mls. NW of Bulawayo.

H

- Haroni-Lusitu Junction, Melsetter Dist., 20 mls. SE of Melsetter.
 Hartley, Hartley Dist., 25 mls. NE of Gatooma.
 Headlands, Makoni Dist., 70 mls. SE of Salisbury.
 Heany, Umzingwane Dist., 15 mls. NE of Bulawayo.
 Hondi Valley, Inyanga Dist., 30 mls. N of Umtali.
 Hope Fountain, Umzingwane Dist., 8 mls. SE of Bulawayo.
 Horseshoe Block, Umvukwes Range, 40 mls. NW of Salisbury.
 Hot Springs, Melsetter Dist., 50 mls. S of Umtali.
 Hunter's Road, Gwelo Dist., 20 mls. N of Gwelo.
 Hunyani, now site of Lake McIlwaine Dam-wall, 20 mls. W of Salisbury.
 Hunyani River, affluent of the Zambezi River, Mashonaland.

I

- Imbeza, Umtali Dist., 5 mls. N of Umtali.
 Insiza, Insiza Dist., 50 mls. NE of Bulawayo.
 Inyanga North, Inyanga Dist., 100 mls. N of Umtali.
 Inyati, Bubi Dist., 35 mls. NNE of Bulawayo.
 Inyazura, Makoni Dist., 95 mls. SE of Salisbury.
 Irisvale, Umzingwane Dist., 40 mls. SE of Bulawayo.

K

- Karoi, Urungwe Dist., 110 mls. NW of Salisbury.
 Kariba, Urungwe Dist., Zambezi River, 35 mls. S of Chirundu.
 Kazungula, Wankie Dist., on Zambezi River, where N. Rhodesia, S. Rhodesia, Caprivi Strip and Bechuanaland meet.
 Kezi, Matobo Dist., 55 mls. S of Bulawayo.
 Khami Dam, Bulawayo Dist., 10 mls. W of Bulawayo.
 Killarney Mine, Insiza Dist., 5 mls. E of Filabusi.
 Kondo, 45 mls. WSW of Umtali.
 Kutama, Lomagundi Dist., 45 mls. W of Salisbury.

L

- Lake McIlwaine, 20 mls. W of Salisbury.
 Legion Mine, Matobo Dist., 90 mls. S of Bulawayo.
 Leopard Rock, Umtali Dist., on summit of Vumba Mountain.

- Lukosi, Wankie Dist., 10 mls. S of Wankie.
 Lumane, Gwanda Dist., 12 mls. N of Gwanda.
 Lundi River, affluent of the Sabi River, Matabeleland.
 Lupane Valley, Nkai Dist., 80 mls. N of Bulawayo.

M

- Macheke, Marandellas Dist., 55 mls. SE of Salisbury.
 Makumbi, Goromonzi Dist., 25 mls. NE of Salisbury.
 Marandellas, Marandellas Dist., 40 mls. SE of Salisbury.
 Matetsi, Wankie Dist., 25 mls. S of Victoria Falls.
 Matopos Dam, Matobo Dist., 18 mls. S of Bulawayo (Schist).
 Matopos Hills, Matobo Dist., 25 mls. S of Bulawayo (Granite).
 Mavuradona Mountains, 20 mls. N of Mount Darwin.
 Mazeppa Mine, Gwanda Dist., 10 mls. ESE of Gwanda.
 Mazoe, Mazoe Dist., 25 mls. N of Salisbury.
 Mchingwe River Bridge, Belingwe Dist., 20 mls. W of Shabani.
 Melsegger, Melsegger Dist., 60 mls. S of Umtali.
 Miani, Urungwe Dist., 120 mls. NW of Salisbury.
 Mohem Mine, near Bembesi.
 Monte Cassino, 5 mls. SE of Macheke.
 Moonies Creek, 5 mls. S of Selukwe.
 Mount Darwin, Darwin Dist., 80 mls. NNE of Salisbury.
 Mount Hampden, Salisbury Dist., 10 mls. NW of Salisbury.
 Mount Silinda, Chipinga Dist., 100 mls. S of Umtali.
 Mrewa, Mrewa Dist., 50 mls. ENE of Salisbury.
 Mtao Forest, Chilimanzi Dist., 10 mls. SE of Umyuma.
 Mtoko, Mtoko Dist., 80 mls. ENE of Salisbury.
 Musami, Mrewa Dist., 50 mls. ENE of Salisbury.

N

- Nampini, Wankie Dist., Zambezi River, 50 mls. above Victoria Falls.
 N'ema Dam, Umzingwane Dist., 5 mls. SE of Essexvale.
 Norton, Hartley Dist., 25 mls. W of Salisbury.
 N'sese River, affluent of the Umzingwane River, flowing into it at a point
 10 mls. SE of Balla Balla.
 Ntabezinduna, Bubi Dist., 20 mls. NE of Bulawayo.
 Nyamashatu River, 12 mls. SSW of Umtali.
 Nyamandhlovu, Nyamandhlovu Dist., 30 mls. NW of Bulawayo.
 Nyamaropa, Inyanga Dist., 75 mls. N of Umtali.
 Nyamaziva, Inyanga Dist., 5 mls. E of Rhodes Estate, 5-6,000 ft.
 Nyaratedzi River, Chibi Dist., 18 mls. NE of Shabani.

O

- Odzi, Umtali Dist., 20 mls. W of Umtali.
 Odzi River, affluent of the Sabi River.
 Odzani Falls, Umtali Dist., 15 mls. N of Umtali.
 Old Umtali, Umtali Dist., 5 mls. NW of Umtali.

P

- Penhalonga, Umtali Dist., 6 mls. N of Umtali.
 Plumtree, Bulalima-Mangwe Dist., 55 m's. WSW of Bulawayo.
 Prince Edward Dam, Salisbury Dist., 10 mls. S of Salisbury.
 Pungwe River Causeway, Inyanga Dist., 40 mls. N of Umtali.

Q

- Que Que, Gwelo Dist., 35 mls. N of Gwelo.

R

- Ramaquabane River, Bulalima-Mangwe Dist., on the Bechuanaland border,
 S of Plumtree.
 Redbank, Nyamandhlovu Dist., 20 mls. NW of Bulawayo.
 Rowa Division, Umtali Dist., 10 m's. S of Umtali.
 Rusape, Makoni Dist., 90 mls. SE of Salisbury.

S

- Salisbury, Federal and Territorial Capital.
 Sawmills, Nyamandhlovu Dist., 55 mls. NW of Bulawayo.
 Sebungwe River, affluent of the Zambezi River, flowing into it at a point
 90 mls. E of Victoria Falls.
 Selukwe, Selukwe Dist., 20 mls. SE of Gwelo.
 Shabani, Belingwe Dist., 100 mls. E of Bulawayo.
 Shamva, Mazoe Dist., 50 mls. NE of Salisbury.
 Shangani River, affluent of the Gwaai River, Matabeleland.
 Shangani (Siding), Insiza Dist., 55 mls. NE of Bulawayo.
 Shawanoe River, Mrewa Dist., 40 mls. ENE of Salisbury.
 Shiloh, 25 mls. of Bulawayo.
 Sinkukwe, Umzingwane Dist., 10 mls. S of Balla Balla.
 Sinoia, Lomagundi Dist., 65 mls. NW of Salisbury.
 Sipolilo, Sipolilo Dist., 85 mls. NNW of Salisbury.
 Springvale, Umzingwane Dist., 16 mls. SE of Bulawayo.
 Stanmore, Gwanda Dist., 15 mls. S of Balla Balla.

Stapleford, Untali Dist., 20 mls. NNE of Untali.
 Sun Yat Sen Mine, Matobo Dist., near Kezi.
 Syringa, Bulalima-Mangwe Dist., 45 mls. SW of Bulawayo.

T

Tandaai, Melsetter Dist., 45 mls. S of Untali.
 Tanganda River, affluent of the Sabi River, 12 mls. SE of Birchenough Bridge.
 Tanganda Tea Estate, Chipinga Dist., 20 mls. SE of Birchenough Bridge.
 Threespanberg Pass, Chipinga Dist., 10 mls. NW of Chipinga.
 Tjolotjo, Nyamandhlovu Dist., 60 mls. NW of Bulawayo.
 Tod's Hotel, Gwanda Dist., 20 mls. SE of West Nicholson.
 Trelawney, Lomagundi Dist., 45 mls. NW of Salisbury.
 Triashill, Iuyanga Dist., 40 mls. NNW of Untali.
 Tsetsera, Untali Dist., 20 mls. SE of Untali.
 Tuli Hill and Tuli Reservoir, 10 mls. SE of Bulawayo.
 Turk Mine, Bubi Dist., 35 mls. NNE of Bulawayo.

U

Ungusa River, affluent of the Gwaai River, Matabeleland.
 Umshagashe River, Victoria Dist., affluent of the Mtilikwe River.
 Untali, Untali Dist., 135 mls. SE of Salisbury.
 Umvukwes Range, 40 mls. NW of Salisbury.
 Umvuma, Chilimanzi Dist., 110 mls. SSW of Salisbury.
 Umvumvumu River, Melsetter Dist., 40 mls. S of Untali.
 Umzilizwe River, Chipinga Dist., 5 mls. N of Mount Silinda.

V

Valindre, Matobo Dist., 10 mls. SW of Bulawayo.
 Victoria Falls, Zambezi River.
 Vumba Mountain, Untali Dist., 10 mls. SE of Untali.

W

Wankie, Wankie Dist., 55 mls. SE of Victoria Falls.
 Wedza Reserve, Marandellas Dist., 60 mls. W of Untali.
 Westacre, Matobo Dist., 18 mls. SW of Bulawayo.
 West Nicholson, Gwanda Dist., 25 mls. ESE of Gwanda.
 Woodvale, Bulawayo Dist., 10 mls. N of Bulawayo.

Z

Zambezi-Sebungwe Junction, Sebungwe Dist., 90 mls. E of Victoria Falls.
 Zezani, Gwanda Dist., on the Umzingwane River near Beitbridge.
 Zimbabwe, Victoria Dist., 15 mls. SSE of Fort Victoria.